

BRAMBLEY HEDGE RABBIT RESCUE



Information Pack

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Some addendums have been placed in this care packet by members of Brambley Hedge Rabbit Rescue.

Recommended Articles to visit and download:

Gastrointestinal Stasis, The Silent Killer (<http://www.bio.miami.edu/hare/ileus.html>)
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check our website for updates and changes – <http://www.bhrabbitrescue.org/links/vets.htm>

Rabbits make intelligent, friendly and quiet house pets. The average life span for a bunny is 7 to 10 years with records of up to 15 years of age reported. The following information is provided to help you enjoy a happy, healthy relationship with your little friend. In addition to this handout there are a number of excellent books on the topic of rabbit health care that you may wish to consult.

DIET

(by Susan A., Brown, DVM, Midwest Bird and Exotic Animal Hospital)

Normal Rabbit Weight

Unfortunately, what we thought was a normal rabbit weight in the past has often been an overweight rabbit. Obesity is a problem with rabbits that eat a diet too high in calories and that don't get enough exercise. A healthy rabbit should be slim and sleek. You should be able to feel the ribs just under the skin without a thick layer of fat. The hindquarters should not have any folds of skin covering or interfering with the digestive tract or urinary openings. The dewlaps in females should not be so large as to interfere with grooming or eating. If you are in doubt about your rabbit's proper weight, please consult your veterinarian.

Cecotropes

Rabbits are herbivores with a marvelous gastrointestinal (GI) tract that allows them to extract nutrients from a variety of sources. Rabbits were designed to live on a diet composed of large quantities of grasses and leaves. They might also browse on flowers and fruits as they could find them at different times of the year. Rabbits are very successful at making the most out of the food they eat, food that many other animals could not even digest. One of the keys to their success is the production of *cecotropes*, which are a special type of dropping that is eaten by the rabbit directly from the anus and then digested. These droppings are not made up of waste materials but rather are rich in organisms that have come from the area of the intestinal tract called the *cecum*. These organisms are packed with nutrients such as amino acids (the "building blocks" of proteins), fatty acids and a variety of vitamins. In order for the rabbit to get these nutrients, the cecotropes and thus the organisms must be eaten and digested thereby extracting the nutrients. In this way, rabbits can extract the maximum nutrients from low energy food materials. They literally produce some of their own food! Rabbits will eat their cecotropes directly from the anus and you will not see these special droppings in the cage. If a rabbit has a medical problem that prevents him/her from reaching the anus, then you may see cecotropes on the cage floor. Cecotropes are elongated, greenish in color, coated in mucous and have a strong odor. Please consult your veterinarian if you see a large number of cecotropes in the cage because your rabbit may be missing vital nutrition. If a rabbit is eating a diet that is too rich in nutrients, such as one that contains mostly commercial pellets, there may normally be a few cecotropes dropped in the cage. **Cecotropes are a vital part of your rabbit's diet.**

Grass Hay

Grass hay is one of the most important parts of your pet's diet. Hay should be provided at all times in your pet's cage. **Hay is appropriate for all ages of rabbits starting at weaning.** Hay provides a number of important things for your rabbit's health.

- Rich in nutrients such as vitamins, minerals and proteins
- Provides "food" for the micro-organisms that make up the cecotropes
- Provides indigestible fiber that promotes healthy motility (movement of contents) of the intestinal tract
- Provide healthy chewing activity to promote proper wear of the teeth (the teeth of a rabbit grow continuously throughout their life)
- Chewing also provides healthy mental activity which decreases destruction of inappropriate objects such as furniture and wallpaper
- Provides a "full feeling" in the stomach which is satisfying and may also prevent inappropriate chewing

Remember that rabbits are designed to live primarily on a diet of grasses and leaves, therefore grass hay can provide a good portion of that diet. There are two basic types of hay available: grass and legume.

- **Grass hays** are made from timothy, meadow, oat, rye, barley or Bermuda grasses. Grass hay availability varies greatly in different areas of the country and the world. You may only be able to

obtain one variety where you live. However, if at all possible, try to feed mixed grass hay or provide two or more individual types. Grass hays are rich in nutrients but provide the lower energy diet appropriate for a house rabbit. These are the healthiest hays to feed. If you have a choice, choose sun-dried hay that has retained more of its nutrients than commercially dried hay. **Do not feed straw.** Straw is devoid of most nutrients and although it is not harmful in small amounts, it will lead to serious nutritional deficiencies if it is a major part of the rabbit diet.

- **Legume hays** are made from alfalfa, clover, peas, beans or peanuts. These hays are loaded with nutrients but have more calories, calcium and protein than a house rabbit needs. **Feeding only legume hays may lead to GI disorders and obesity and for this reason we do not recommend feeding these hays.** If you mix legume hay with grass hay, the rabbit may only pick out the calorie-rich legume hay and thus overload itself with calories, thus we do not recommend mixing grass and legume hay. If you live in an area where only legume hay is available it is preferable to use it rather than no hay at all. However you may wish to limit the amount of hay if your pet experiences excessive weight gain or GI problems.

Sources for hay include veterinary clinics, horse barns, feed stores and rabbit clubs. When you buy hay you need to consider the following:

- ◆ Buy hay that smells fresh, never buy damp or old hay
- ◆ Buy from a reputable source that replenishes the hay frequently
- ◆ If you buy from a feed store or horse barn, buy hay that has not been on the top of the pile to prevent contamination with animal or bird droppings.

Hay can be stored at home in a dry place that has good air circulation. Do not close the bag of hay but rather leave it open. Hay can be given to your pet in a variety of ways including in a hay rack on attached to the side of the cage, in a box or basket within the cage or exercise area, or even placed in the litter box. Rabbits often pass stools when they are eating and placing some hay in the litter box can help with bathroom training. They will not eat soiled hay, so you need not worry about sanitation. Always keep hay in the cage or exercise area and replenish as needed. **Providing grass hay in the diet is a major key in preventing many diseases in the pet rabbit.**

Green Foods

Green foods are equally as important as hay in the rabbit's diet. Remember we said that rabbits are designed to eat grasses and leaves, so green foods represent the "leaf" part of the diet. Green foods provide all the same benefits that we listed for hay. They also contain a wider variety of micronutrients and importantly provide water in the diet. Even though you may be providing a water container in the cage, rabbits do not always drink as much as they should. Feeding green foods forces the rabbit to take in liquid and thus helps promote healthy GI function as well as kidney and bladder function. You will notice that if you feed your pet a lot of green foods, he/she will drink less water and that is normal.

If your rabbit has never eaten green foods before, we recommend starting him/her on hay first. This will help to make the appropriate changes in the GI tract, including improving movement and production of cecotropes. In this way you can avoid the problem of "soft stools" that is occasionally noted when a rabbit that has never eaten hay or greens is given greens. This is not a dangerous disease; it is only the rabbit's intestinal tract making changes from its sluggish state to a more active state. However, these soft stools can be messy, so making the change to hay first for a couple of weeks will avoid this problem.

Greens are appropriate for any age of rabbit. If a weaned rabbit is eating hay, he can eat greens right away. When selecting and using green foods follow these guidelines:

- ◆ Buy (or grow) organic if possible
- ◆ Wash any green foods first
- ◆ Feed a variety of green foods daily – a minimum would be three varieties – variety provides a wider range of micronutrients as well as mental stimulation for your pet
- ◆ Feed a minimum of 1 packed cup of green foods per 2 pounds of body weight at least once a day – feed more if your pet is eating hay as well, there is not real upper limit

There are two situations that can occur that will alter the manner with which you feed greens. The first situation is where a select green food causes a soft stool. You will know if this is the case within 12 hours of feeding the offending food. If you are feeding a variety of greens, and not

sure which one is causing the problem, then feed only one green food every 48 hours until the offending food is identified and then simply remove it from the diet. This is not a dangerous situation, but it can be messy and there is no need to feed a food that is causing a problem. There are many green foods from which to choose.

The second situation concerns rabbits that have lost too much weight that need to gain weight after a serious illness. It is extremely rare to see a rabbit lose too much weight on a diet of hay and green foods, unless the rabbit is not eating the hay and is only eating greens. Hay is a more concentrated food than greens. In any event, if you are trying to put weight back on a rabbit, you can limit the greens to one cup/2lbs of body weight maximum to encourage an increase in hay consumption.

There are a huge variety of green foods that you can offer your pet. You might even consider growing some yourself! In general, the darker green a food is the higher the nutritional value. This is why, for instance, we do not recommend iceberg lettuce. It is not dangerous, but is low in nutritional content. You can use packages of mixed salad greens if they contain dark colored greens and are not comprised primarily of iceberg lettuce or romaine lettuce. Please, no salad dressing!

Here is a list of some of the green foods you might consider:

Broccoli (leaves and top)	Brussels sprouts	Bok choy
Cabbage (red, green, Chinese)	Celery (leaves are good) – <i>cut celery into small pieces to prevent choking on strings</i>	Cilantro
Collard greens	Chickory	Borage
Basil	Dandelion greens (and flower)	Endive
Escarole	Swiss chard (any color)	Mustard greens
Kale	Parsley (Italian or flat leaf best)	Leaf lettuce
Baby greens	Romaine lettuce	Raddichio
Carrot/beet tops	Watercress	

Fruits and Other Vegetables (Treat Foods)

Depending on the time of year, rabbits in the wild would have access to additional foods such as fruits, vegetables and flowers. **Since these items do not make up the majority of the diet, we recommend feeding these special items in limited quantities.** Another reason for limiting the amount is because some rabbits like these foods so well, that they will eat them to the exclusion of all others thereby creating a potential for health problems. Foods from this list can be fed daily and you may even wish to use them as part of a reward or training system. These treat foods are far healthier (and less expensive) than the commercial treat foods sold for rabbits. **Commercial treat foods should be totally avoided because they are loaded with starch and fat and if fed in quantity can cause serious health problems.** Stick to “natural” and healthy treats for your pet.

Follow the same guidelines as listed for selecting and using green foods with the exception of the amount. You can feed your pet **a total of 1 heaping tablespoon per 2 pounds of body weight per day** of any combination of the foods below:

Kiwi Fruit	Strawberries	Blueberries
Raspberries	Blackberries	Apple
Pear	Peach	Papaya
Pineapple	Cactus fruit	Melons
Bean or alfalfa sprouts	Green/red bell peppers	Mango
Pea pods (flat, NO peas)	Cherries	Cranberries

Edible flowers from the garden (organically grown and NOT from a florist) such as roses, nasturtiums, day lilies, pansies and snapdragons

Dried fruit can be used as well, but since it is so concentrated, use only half the amount as fresh. We do not recommend feeding bananas and grapes as rabbits sometimes become “addicted” to these foods. If you do choose to feed them, watch your pet carefully to ensure he/she is also eating sufficient quantities of green foods and hay.

Forbidden Foods

A diet of grass hay and green foods with small amounts of fruits and vegetables contains all the nutrition necessary for the pet rabbit. Unfortunately there are many commercial treat foods sold for rabbits that contain high levels of starch and fat. In addition, some people still feel that it is necessary to feed rabbits high starch foods. Although a pet rabbit can eat very small amounts of starchy or fatty foods, without ill effect, the problem is that people often feed excess amounts because the rabbits eat these foods so greedily. **Our recommendation is to completely avoid high starch and/or fat foods for your pet.** In this way you will avoid any potential problems these foods can cause including obesity and serious GI disease. It is always easier to prevent than to treat a disease.

Examples of high fat and/or starch foods to AVOID include:

Beans (of any kind)	Peas	Corn
Breads	Cereals	Nuts
Seeds	Oats	Wheat
Chocolate	Refined sugar	Any other grains

Water

Water should always be available, and changed daily. A dirty water container can be a breeding ground for bacteria. Use either a water bottle or a heavy bowl that is weighted or secured to the side of the cage so that it does not tip over. Do not use medications or vitamins in the water, because your pet may not drink the water if the taste or color is altered. **Please remember if your pet is eating a large quantity of greens that the water consumption may be minimal.**

Vitamins/*Lactobacillus*/Enzymes

Vitamins are **not** necessary for the healthy rabbit. Rabbits will obtain all the vitamins they need from their cecotropes, grass hay and green foods. The misuse of vitamins can cause serious disease. If your pet becomes ill, particularly if he/she is unable to eat the cecotropes, then your veterinarian may prescribe vitamin therapy. Please do not use supplemental vitamins in a healthy pet. **In addition, rabbits on a healthy diet do not need a salt or mineral block.**

Lactobacillus or *acidophilus* are bacteria found in the GI tracts of a number of different species. In some older texts there was a recommendation to feed rabbits yogurt (which contains active cultures of these organisms) to improve the health of the GI tract. However, there is no benefit to feeding these bacteria to the rabbit because *Lactobacillus* does not hold an important place in the rabbit GI tract and adult rabbits may not be able to adequately digest dairy products. Other products, called *probiotics*, that contain bacteria more specific to the rabbit GI tract, are available but their benefits are still controversial. A rabbit on a healthy diet of grass hay and green foods should be able to maintain a normal population of bacteria without additional supplementation. **We do not recommend the routine use of probiotics in the healthy rabbit.**

Some older texts recommend feeding digestive enzymes to rabbits to help dissolve hairballs. This is of no benefit to the rabbit because such products do not dissolve hair and the problem is not the hair anyway. Although these products will not harm the rabbit, they are of no use.

Commercial Rabbit Pellets

It may seem odd that this topic is the last on our diet list. This is because we feel that commercial rabbit pellets DO NOT need to be part of a healthy house rabbit diet. As mentioned several times, rabbits gain all the nutrition they need from a grass hay and green foods diet along with their cecotropes. In addition, these foods promote a healthy GI tract and proper wear for the teeth. Pellets are not necessary for the healthy rabbit at any age. (See *Brambley Hedge Addendum later in this pamphlet*)

Pellets were originally developed for the rabbit in the meat, fur and laboratory animal industry to provide a uniform and highly concentrated food that could easily be fed to large numbers of animals. The pellets are loaded with concentrated nutrition to promote rapid growth. Rabbits in these industries have a shortened life span, unlike the house rabbit. Commercial pellets work well in these industries, but can wreak havoc with the house rabbit.

The problems that a diet comprised primarily of commercial pellets can create in the house rabbit include:

- ◆ High calorie content can lead to obesity – easy to overfeed because the rabbit is always acting “hungry”
- ◆ High protein content can lead to eating less cecotropes which are dropped in the cage
- ◆ Low indigestible fiber content can lead to a sluggish GI tract and eventually more serious GI disease including complete GI shutdown
- ◆ Doesn't promote normal tooth wear due to the concentrated nature of the food – a couple of chews and the food is pulverized
- ◆ Lack of sufficient chewing activity and “full feeling” in stomach due to concentrated nature of the food may lead to inappropriate or excessive chewing on furniture, plants, wallboard, etc. – could be related to “boredom”?
- ◆ Concentrated, dry nature of food may not promote normal water intake resulting in potential urinary tract disease

There have been improvements in a few of the commercial pellet brands available to the public, including increased indigestible fiber levels and decreased calorie, protein and calcium content. There have also been some unfortunate changes such as adding seeds and nuts or sugars to the diet, which are all detrimental to your pet. However it still remains that pellets are not a necessary component of a healthy house rabbit diet and need not be fed. Remember that rabbits were designed to eat a diet comprised of a large volume of grasses and leaves, not a low volume, highly concentrated diet. Rabbits in the wild do not need to come to a feed station for a meal of pellets to survive and our pets do not need this either!

So, are there any circumstances where we might consider feeding pellets to our pets?

The following is a list of situations where a good quality commercial pellet might be useful as part of a diet, but not the complete diet.

- ◆ In households where hay cannot be used due to human allergies or unavailability
- ◆ To implement a weight gain most often related to a debilitating illness
- ◆ When humans are too lazy to feed the appropriate diet of grass hay and greens!

The last comment may seem a little harsh, but it is true. Sometimes people get a pet and then realize that there is more effort involved in taking care of it than was previously believed. If we really want to provide the healthiest diet for our pets we should be striving to reproduce its natural diet, not taking the “easy” way out for our own convenience. Providing a healthy diet for a rabbit is neither difficult nor expensive and in addition will save you many dollars in veterinary bills. **The number one cause of disease in the rabbit remains an inappropriate diet, and the number one prevention for these diseases is a diet of grass hay and green foods.**

If you do need to feed pellets for any reason then buy those that are at least 18% or higher in fiber, 2.5% or lower in fat, 16% or less in protein, and 1.0% or less in calcium. Please consult your veterinarian for the amount that needs to be fed to your pet.

Bunny's Fruit / Veggie List

(taken from House Rabbit Society, <http://www.rabbit.org/chapters/san-diego/diet/foods.html>)

General guidelines are to feed a minimum of 1 cup of vegetables for each 4 lbs. of body weight. Select at least three types of vegetables daily. A variety is necessary in order to obtain the necessary nutrients, with one each day that contains Vitamin A, indicated by a * below. Add one vegetable to the diet at a time. Eliminate if it causes soft stools or diarrhea. Remember - each rabbit is an individual, and you will need to alter these guidelines to meet your rabbits' specific requirements based on his health and sensitivity to certain foods.

Limit fruits to 1-2 tablespoons per 5 lbs. of body weight (none if dieting) from the list below of high fiber fruits. Sugary fruits such as bananas and grapes should be used only sparingly, as occasional treats. Bunnies have a sweet tooth and if left to their own devices will devour sugary foods to the exclusion of healthful ones.

Vegetables:

Alfalfa, radish & clover sprouts	Basil
Beet greens (tops)*	Bok choy
Broccoli (mostly leaves/stems)*	Brussel sprouts
Carrot & carrot tops*	Celery
Cilantro	Clover
Collard greens*	Dandelion greens and flowers (no pesticides)*
Endive*	Escarole
Green peppers	Kale *
Mint	Mustard greens*
Parsley*	Pea pods (the flat edible kind)*
Peppermint leaves	Raddichio
Radish tops	Raspberry leaves
Red or Green Leaf lettuce	Romaine lettuce (no iceberg or light colored leaf)*
Spinach *	Watercress*
Wheat grass	

Fruits:

Apple	Blueberries
Melon	Orange (remove the peel)
Papaya	Peach
Pear	Pineapple
Plums	Raspberries
Strawberries	

Absolutely NO chocolate (poisonous!), cookies, crackers, breakfast cereals, bread, pasta, yogurt drops, or other "human treats." There is research to suggest these items may contribute to fatal cases of enterotoxemia, a toxic overgrowth of "bad" bacteria in the intestinal tract.

Large, unlimited amounts of fresh hay and water should be offered daily. Young bunnies should be introduced to hay as soon as they can eat on their own. Mixed grass hay or Timothy hay is preferred because it is lower in calories and calcium than alfalfa.

Rabbit Pellets

(by House Rabbit Society, <http://www.rabbit.org/chapters/san-diego/diet/pellets.html>)

Rabbit pellets, known for their ease of feeding and rapid weight gain, were originally developed for the rabbit "livestock" market, where rabbits are raised for their meat or fur and not intended to live out their potential lifespan. For house rabbits, however, pelleted diets can contribute to obesity, chronic soft stools, overproduction of cecals, and from pellets high in calcium, urine sludge and other calcium-related health issues can occur. For the house rabbit who is expected to live 10 years or longer, and may not get enough exercise, a diet that is primarily high in fiber and low in calories is preferred to maintain a healthy weight. And, don't forget plenty of fresh water every day, in a crock or crock & water bottle.

Additional problems that can occur with a pelleted diet, is that the pellets most commonly available to consumers are through pet supply stores. Often, these pellets are high in calcium, contain too much sugar (many contain molasses as a binder), and some manufacturers have even added several dangerous additives to their pellets, such as corn, seeds, and dried fruits that clearly cause obesity in house rabbits.

At the San Diego House Rabbit Society, **we typically recommend feeding a very limited** amount of pellets. And, we recommend sticking to pellets that are high in fiber and low in protein, such as Oxbow's Bunny Basics T (timothy pellets) for a maintenance diet, or Purina's High Fiber Lab Diet (high-fiber alfalfa pellets) for young, growing bunnies or older bunnies that need to add-on weight.

We concur with Dr. Susan Brown (see her article on Rabbit Nutrition) that a typical diet should consist of 1/8 cup pellets per 4 pounds of weight - if fed at all. Many adult rabbits, on a weight maintenance diet, do not need pellets. Carrot Cafe' also gives good guidelines on the type and amount of pellets to feed rabbits of different ages, weights, and levels of health.

Rabbit Nutrition: Facts And Fallacies About Treat Foods

(by Susan M. Smith, Ph.D., Nutritional Sciences, University of Wisconsin-Madison)

That cute little whiskered face is so hard to ignore, especially when your bun sits up and looks so deserving of that special treat. And pet stores sell a selection of rabbit treats which are perfect for your precious rabbit. Right? WRONG!!! Most so-called rabbit treats are the equivalent of taking your rabbit to McDonald's, providing non-nutritious junk that can cause potential harm to your rabbit. Confusing the issue is that many of these products use phrases that lead the buyer to believe that the product is healthful: "nutritionally fortified," "doing right for the environment," "natural feeding habits," "for nutritional variety," "the finest selected ingredients." The addition of "feeding instructions" and "guaranteed analysis" lend a cache of authority.

Commercial rabbit treats fall into several categories: pellets, processed cereal kibble, mueslix (dried seed/fruit/veggie mixes), cereal/veggie blends, and candies/sugars. None confer an advantage over the fresh vegetable, high fiber pellets, and unlimited hay diet. Pellets were discussed in the House Rabbit Journal. I won't say more here except to repeat those guidelines: chose a pellet that is high in fiber (20-25%) and low in protein (14-15%) and calcium (<1.0%). Restrict pellet feedings to HRS guidelines and feed plenty of fresh vegetables and unlimited hay. Do not buy a pellet that contains seeds, nuts, or starch-rich cereal kibble mixed in (see below).

Processed Cereal Kibble. These range from "Crunchy Puffs" to shaped products designed to substitute for pellets. Some contain expensive extras that serve no benefit to your rabbit, such as plant or herbal extracts and freeze dried bacteria. One contains less than the National Research Council (NRC) requirements for calcium. Another contains cheese flavoring! Supplementation with digestive enzymes (proteases, amylases) normally is unnecessary because these foods are highly digestible and because there is no evidence that healthy rabbits produce insufficient levels of these enzymes; in fact, some of the most important digestion is by the cecal bacteria. These kibbles tend to be lower in fiber and higher in fat. They are also extremely expensive and come with feeding recommendations destined to give a spayed or neutered house rabbit obesity. The variety of colors and shapes are more of an aesthetic to the human buyer than to your rabbit. Again, fresh vegetables, restricted high fiber pellets, and unlimited hay are healthier and easier on your budget.

Mueslix. These are mixes that are made of seeds and grains. They are marketed as "vitamin and mineral enriched," a "delicious energy provider," or "fortified." They are made of carbohydrate and fat-rich seeds and grains such as oats, milo, corn, peas, sunflower seeds, potatoes, peanuts, puffed corn, cornflakes, popcorn, and dried fruits. They are often held together into "sticks" with honey and other sugars, and are marketed with the explanation that they supply needed energy and reflect the rabbit's normal diet. In reality, a diet of vegetables, hay and restricted pellets provides all the nutrients and energy your house rabbit needs. Seeds are high in fat and are important for wintering animals. Your house rabbit has no such need; in fact, the National Research Council recommends that domestic rabbits receive no more than 1.5% of their calories as fat. Labels on the back of these mueslix products list a minimum fat content of 4-5%; the real value is probably greater. Rabbit metabolism is geared for a low fat diet (in comparison, the average human diet contains 35-40% fat!), and the excess is not burned but is stored as body fat. Rabbits appear to be more sensitive to fat than are humans, and in addition to obesity, the excess fat can accumulate in your rabbit's liver and arteries (atherosclerosis). Veterinarians have reported that rabbits fed seed-rich diets have a much higher incidence of fatty liver disease (hepatic steatosis), which is often fatal. These seeds and grains are also rich in starches. While some of this starch is digested in the small intestine, much of it is not accessible until it reaches the cecum. There it becomes a potent energy form for the cecal bacteria; unlike cellulose fiber, which slows fermentation, starch in the cecum is fermented rapidly and can lead to bacterial overgrowth, bloat, and GI stasis. Manufacturers claim that seeds and grains satisfy "the chewing urge." While this is true, it is far safer and cheaper to satisfy that urge with baskets, untreated wood, and cardboard boxes.

Cereal / veggie blends. These are grain products that may be supplemented with dehydrated vegetables, and shaped into a form which mimics a vegetable product. There is no advantage to feeding these over the real vegetable. One product label lists three different cereals before the dehydrated vegetable! The high carbohydrate content of these snacks means they are robbing your rabbit of important fiber and overloading him with sugars. These products also tout the vitamins that are added back (due to processing); real vegetables will supply as much if not more. With 2.1 ounces costing \$3.09 (\$24 per pound), a pound of carrots and some cardboard provides a healthier and cheaper alternative.

Candies/Sugars. These can include everything from yogurt drops to sweetened papaya tablets. The high sugar is the culprit here. Many rabbits have a sweet tooth, but sweetness means a high content of sugars. As we discussed above, excessive sugar is converted to fat, or will pass into the cecum where the bacteria will use it for energy and then rapidly overgrow, possibly leading to bacterial imbalance and GI stasis. The same can occur after feeding too much fruit. Avoid feeding your rabbit simple sugars and instead stick with nutritious treats such as vegetables and herbs; save the sweets for an occasional raisin or banana snack.

Vitamin supplements. These are largely unnecessary. For nearly all rabbits, a diet containing a variety of fresh vegetables, restricted high quality pellets, and unlimited hay provides all the vitamins your rabbit requires; many of your rabbit's vitamins come from her normal ingestion of cecal pellets. While special health situations may require nutrient supplements, these are best handled after consultation with your veterinarian. It is tempting to show your love for your rabbit by purchasing treats for her. If you are in doubt, read the ingredient label; pay particular attention to the list of ingredients (they are listed in order of abundance) and the percentage of fiber and fat. Speaking as a nutritionist, my best advice is to save your money and show your love with healthy treats like vegetables, hay and untreated wood for chewing. And give plenty of pets, which are of course free.

►► **Addendum prepared by Brambley Hedge Rabbit Rescue.**

Pelleted Food: *Should be available 24 hours a day for rabbits under 6 months old. After 6 months of age, pellets should be reduced to 1/8 cup per 5 pounds of body weight (but hay must be a substantial part of the diet; see below). We agree that pelleted food should not be the main staple of a rabbit's diet; however, we are not convinced that a pelletless diet is appropriate for all rabbits. Appropriately portioned feeding of pellets is beneficial for the nutrients it provides and in the assistance of proper wear of the constantly growing teeth. The recommended portions of pellets are listed below:*

Daily Amounts:

<i>Rabbits up to 7 months</i>	<i>Free access to pellets due to rapid growth</i>
<i>8 mos/up, 2-4 lbs. body weight</i>	<i>1/8 cup daily</i>
<i>5-7 lbs. body weight</i>	<i>1/4 cup daily</i>
<i>8-10 lbs. body weight</i>	<i>1/2 cup daily</i>
<i>11-15 lbs. body weight</i>	<i>3/4 cup daily</i>

Fresh Vegetables: *We recommend waiting to introduce fresh vegetables until approximately 4 months of age.*

Hay

A constant supply of good quality hay must be available 24 hours a day. It has been documented that plenty of roughage, especially hay, will reduce problems with hairballs and other blockages, which can be deadly to rabbits. If you want your rabbit to live to his or her full life expectancy of 8 - 10 years (14-16 years in some instances) you must provide hay. Alfalfa hay may be fed until the rabbit is 6 months old, after that age you should switch to a grass or timothy hay and you may feed timothy hay to rabbits less than 6 months of age to avoid having to make the change. Other good sources of roughage are apple tree twigs. Other fruit tree clippings may be offered, but they must be thoroughly dried (minimum of 30 days) before using, because they contain cyanide that dissipates during the drying process. Do not use if the tree has been sprayed.

ENVIRONMENT & HOUSING

ENVIRONMENT

(by Susan A., Brown, DVM, Midwest Bird and Exotic Animal Hospital)

Cage

House rabbits should never be kept completely confined to a cage. Exercise is vital for the health of the rabbit. All too often we hear well meaning, but poorly informed, people describe rabbits as easy to keep because "they can be caged and don't take up much space! This idea has led to many rabbits

being caged most of their lives with the distinct possibility of developing both physical and behavioral disorders. They are designed to run and jump and move about a large area.

To confine a rabbit to a cage exclusively to a cage can cause several problems:

- ◆ **Obesity** – caused most often by a diet too high in calories coupled with a lack of exercise
- ◆ **Pododermatitis** – Inflammation of the feet caused by sitting in a damp or dirty environment
- ◆ **Poor bone density** - Rabbits that are continually confined to a small cage can exhibit marked thinning of the bones which may lead to more easily broken bones when handling
- ◆ **Poor muscle tone** - If the rabbit can't exercise, the muscles, including the heart, will be underdeveloped and weak
- ◆ **Gastrointestinal and urinary function** - A rabbit that sits all day in the cage with little exercise can develop abnormal elimination habits
- ◆ **Behavioral problems** - Continually caged rabbits can exhibit a wide range of abnormal behaviors including lethargy, aggression, continual chewing of the cage bars, chewing fur (obsessive grooming), and destruction of the entire contents of the cage.

A cage can be used as a "home base" for part of the day or it can be open all the time within an exercise area. The cage should allow the rabbit to stand up on its hind legs without hitting the top of the cage, provide a resting area and space for a litter box. It should be easy to clean and indestructible, therefore metal is probably the best choice. The floor can be solid or wire. Keep the cage in a well-ventilated, cool area. Basements are often too damp, which can promote respiratory disease. If you must house your pet in a basement, use a dehumidifier and a fan to improve the air quality. The optimum temperature range for a rabbit is 60-70 degrees F. When the temperature rises into the mid 70's, you may see drooling, and a clear nasal discharge. If temperatures reach the upper 80's and beyond, especially if the humidity level is high, there exists a potential for a fatal heat stroke. On hot days, when air conditioning is not available, leave a plastic milk jug filled with frozen water in the cage, for use as a portable "air conditioner".

Rabbits can be caged outdoors if they are provided with a shelter to protect them from rain, heat and cold. In addition, make sure the cage is secure from predators such as dogs, coyotes and raccoons and is kept clean to keep from attracting parasitic insects. In the winter use straw bedding in the sheltered area for insulation and make sure that the water bowl is changed daily. Your pet can dehydrate rapidly if the water is frozen for more than a day.

Exercise Area

As mentioned, it is vital to the health of your pet to provide an exercise area where your pet can roam for a few hours every day. The easiest way to accomplish this is to use fencing panels sold for exercising dogs. These can be found at most pet stores. Buy fencing that is at least three feet high for small and medium rabbits and four feet high for giant breeds. These panels are easily put together with metal pins and can be configured to any size or shape needed. The pen keeps your bunny away from furniture, electrical cords and toxic materials. The pen can also be used outside as a moveable enclosure to allow your pet access to grassy areas. **Never leave a rabbit outside in a pen unsupervised**, because dogs, cats and raccoons may be able to knock down the fencing or climb over it and harm your pet. If you need to protect the floor under the pen you can use a sheet of no-wax flooring which is available at most hardware stores. It can be easily cleaned and rolled up when not in use.

If you are going to allow your pet free access to your house you need to "bunny-proof" it. Block all escape routes, cover or block access to electrical, phone and computer cords, cover furniture to protect it from the rabbit's teeth and claws and remove access to toxic plants, rodenticides, insecticides and other toxic materials.

Litter Box (see also Litter Box & Litter Box Training Section later in this pamphlet)

Rabbits can be litter box trained relatively easily. When beginning training, confine your pet in a small area, either in a cage or a blocked off section of the room and place a litter box in the corner (try to pick the corner your pet has already used for its toilet). Make sure the sides of the box are low enough so your pet can get in and out easily. It is helpful to put some of the droppings in the box. Some people have also found it helpful to put some hay in the box to encourage defecation in the box (they usually pass stool while they are eating). In exercise areas, provide one more litter box than the number of

rabbits you have and put newspaper or plastic under the litter box to protect your floors from accidents. Never punish your pet while in the litter box

Pelleted litter makes the best bedding and is preferred over wood shavings, corncob and kitty litter. Pelleted litters are non-toxic and digestible if eaten, draw moisture away from the surface keeping it drier, control odor well and are can be composted. **Do not use clay or clumping kitty litter.** We have had cases where rabbit ate these products and died from an intestinal impaction. There are a wide variety of pelleted beddings available through pet stores, veterinarians and rabbit clubs.

Rest/Hide Area

The ancestors of our pet rabbits would have spent a good portion of their day in protected burrows underground. Our pet rabbits retain the same need to have a protected area in which they feel safe and secure. Some rabbits are content to sit in a box full of hay, others like a completely enclosed box in which to hide. Try providing untreated wicker or straw baskets, litter pans or other shallow boxes filled with hay, cardboard boxes with an entrance hole and the bottom removed or large cardboard tubes as places to hide. Use your imagination! If the cage has a wire floor, provide a solid area on which the pet can rest. Use material that is washable or disposable and absorbent. Some examples might be fake fleece (not long fur) found in sewing stores or absorbent baby blankets (not terry cloth towels). Do not use carpet squares because they are not absorbent, they are abrasive to the feet and they cannot be thoroughly cleaned.

Toys *(See also Toy Section later in this Pamphlet)*

Rabbits get a fair amount of mental exercise from their diet of grass hay and green foods, but additional toys are appreciated. Rabbits like to chew, so give them branches from untreated trees (please dry the wood for at least a month to prevent any adverse reactions to the sap), wooden chew toys designed for birds, or unfinished, unpainted wicker or straw baskets. They like things that make noise such as keys on an unbreakable key holder, empty plastic or metal cans, hard plastic baby toys and jar lids. They like things that both move and can be chewed such as toilet paper or paper towel rolls, empty small cardboard cartons and small piles of shredded paper.

HOUSING

(compiled from House Rabbit Journal of the House Rabbit Society)

Cages in General.

Rabbits were not designed to live on wire floors! Being on wire floors will cause sores to develop on rabbit's feet. Cages were designed for the convenience of rabbit breeders with lots of rabbits who were looking for an easy way to care for many rabbits in the least amount of time. A house rabbit does not need a wire floor. All cages with wire floors must have a piece of plywood, a ceramic tile, sea grass mat, cotton rug, Plexiglass or carpet square that the rabbit can sit and lay on. If you try carpet and the rabbit chews on it, immediately remove it and replace it with another product. The thing to remember about cages is: the bigger the better! A single rabbit confined to a cage for over 12 hours a day must have a cage at least 3'L x 2'W x 2'H. Better yet consider building a two-story "condo" for your bunny. The rabbit needs room for all of its accompaniments (bowls, bottles, litter box) and to have room to lie out, move around and to be able to sit up to groom itself.

Rabbits Outside.

It's a joy to watch rabbits when the play outside, but.... Do not let your rabbit onto grass that has been sprayed with pesticides or lawn fertilizers. Always supervise your rabbit while she's outside. It takes just a few seconds for the neighbors' or your own dog to jump the fence and attack or frighten the rabbit (literally) to death. Under no circumstances should the rabbit be left outside after dark, even in the middle of cities. Predators are hawks, owls, possums, raccoons, coyotes, dogs and occasionally even a cat will attack a small rabbit. If you have an enclosure that you feel is very secure, a rabbit can still die of fright while a predator attempts unsuccessfully to break into the enclosure.

Caged Part of the Time

An untrained rabbit can and probably should, be kept in a cage while you're not home to supervise. Rabbits are crepuscular, which means that they generally sleep during the day and during the night but are ready to play at dawn and at twilight. So if you're at work during the day, they won't mind so much being in a cage. But they must be let out for at least several hours each day, both to exercise and to have social interaction with you.

Confined To a Room or Cage Only While You're Away

Bored rabbits become naughty rabbits. If you're not around to talk to or pet your rabbit as you prepare dinner, watch TV or just read, your rabbit will become very bored. That's when rabbits generally get into trouble, by digging in the carpet, chewing on forbidden objects or eating your leather couch. A very large hole can appear in the carpet in just a few minutes time. The younger rabbits are generally the ones that get into this type of mischief.

So even if your rabbit starts out this way, you might check every few months to see if she can earn more freedom as she ages. Often the bathroom, laundry room, kitchen or bedroom safe places to confine your rabbit while you're away. These rooms are easy to rabbit proof. If none of these rooms are practical then you'll probably have to consider a cage of some sort.

►► Addendum prepared by Brambley Hedge Rabbit Rescue.

Outdoors in Arizona: *The article by Dr. Brown was published on the East coast. Please note that the Arizona temperatures (over 80-85 degrees) are extremely dangerous for domestic rabbits. Your pet rabbit's air cooling system consists of the veins in their ears. If it's a lop-eared rabbit, it's in trouble. If it's a dwarf rabbit with small ears, it's in trouble. If it's a dense-furred rabbit, it's in trouble. If it's a dark-colored rabbit, it's in trouble. (Incidentally, if it's a light-colored rabbit, it's in trouble because it is easily seen prey for flying predators.) A domestic rabbit cannot pant like a dog to cool its body. If you see its head shaking, it's in heat crisis.*

LITTER BOX & LITTER BOX TRAINING TIPS

(from the San Diego Chapter of the House Rabbit Society)

*Are your rabbits' previously pristine litter box habits changing for the worse?
Has your rabbit decided your entire house is now his litterbox?*

First, determine if the reason could be medical, perhaps a bladder infection. A trip to your rabbit's veterinarian may be in order to detect a urinary illness.

What is the age of your rabbit? Do not expect a baby bunny to be totally litterbox trained, they are still young. That would be like expecting a newborn baby to be toilet trained. Their bladder control increases as they mature. Be patient with very young, unaltered rabbits.

Is your rabbit spayed or neutered? When rabbits reach the age of 4-6 months their hormones become active and they usually begin "marking their territory". By spaying or neutering your rabbit he will be more likely to use the litterbox and will be a happier, healthier, calmer rabbit.

Decrease freedom and increase litterboxes. Do not give your rabbit total freedom of the house. When you decrease his freedom and increase litterboxes, you are increasing his chances he will make it to the litterbox. Keep two or more litterboxes outside the cage and one inside the cage. As his habits improve, you can decrease a litterbox or two. If you have more than one rabbit, you may see less control and more marking, If slip-ups begin, start shorter periods of freedom and more litterboxes.

Keep litterboxes very clean. Rabbits are very clean creatures. A smelly soiled litterbox could cause your rabbit to choose another place to do his business sometimes just outside the box. Depending on the number of rabbits and litterboxes, clean litterboxes at least once every 1-2 days. Once a week in NOT enough!

Spritz litter pans with white vinegar to clean and deodorize. Let pans soak if there is urine build-up and then rinse clean. Do not use chemicals. If your rabbit marks an area, blot up the urine and dab on white vinegar or a commercial enzyme deodorizer to neutralize the odor. Do not leave the smell or he may be encouraged to revisit.

Try a different litter. We suggest one of the many organic paper litters available (Unscented: Yesterday's News or Carefresh – can be found in the cat litter section of local Petsmart). Sometimes the

strong scent of litter will keep bunny out of the box. **Avoid** pine and cedar shavings and clay or clumping cat litters. These are harmful to the rabbit. Also try a handful of fresh hay on one side of the litterbox. This will usually entice Bunny to get into the box. You can also put a few of his droppings in the box, but just a few!

Be consistent. Get your rabbit into a daily routine and try not to vary it. Rabbits are very habitual and once a routine has been established, they usually prefer to stick with it. Routines make learning easier.

Adapt to the stubborn bunny. If your rabbit is continually going in an opposite corner from his box, put his box in the area he has chosen, even if it means rearranging his cage or moving a table in the living room. He has already decided where he wants his box and it is much easier to oblige than to try to work against a determined bunny!

SETTING UP BUNNY'S LITTERBOX

(from the San Diego Chapter of the House Rabbit Society)

Not sure how to set-up a bunny-friendly litterbox? Learn the basics, below, and help your bunny on his way to successful litterbox training.

Plastic Cat Pan: Basic plastic cat litter pans work best for bunny's litterbox. They come in sizes small, medium, large, and giant, and can be found at stores such as Target, Wal-Mart, and Kmart, for a nominal price. We recommend sticking to the medium, large, or giant litter pans for most bunnies, unless your bunny is very tiny. However, you can't go wrong with a larger litter box that your bunny can grow into. Choosing the size of pan to buy, will depend on the size of your bunny. Medium cat pan, for small bunnies under 4 pounds. Large cat pan, for medium bunnies under 10 pounds. Giant cat pan, for large bunnies over 10 pounds, or bonded pairs. If you have a pair of bunnies sharing the same litterbox, you'll want to get one very large box, or give the bunnies multiple boxes to keep them well supplied with hay and fresh litter.

Setting-up the Litter Box: We recommend using Yesterday's News or CareFresh and fresh hay to prepare your bunny's litter box. Yesterday's News and CareFresh are bunny-safe pet bedding that does not contain any pine or cedar products, and is also environmentally friendly. Fresh hay in the box entices bunny to jump in and do his "business."

A clean box with about 1 inch of clean litter covering the bottom. Next, add a BIG handful of hay over the top. About 12 hours later, you should see a well-used box. You will be able to see that bunny has created a "bathroom" end and a "kitchen" end (the end with remaining clean hay).

Keep a Fresh Box: Change bunny's box every day, to ensure a clean, fresh box. This will prevent bunny from heading to cleaner places to eliminate. If your bunny does not soil his box completely within a 24-hour period, simply add another large handful of hay to the "kitchen" end, to replenish his supply. But never go for more than two days before giving bunny a fresh litter box.

Once dirty, dump the entire contents of the box into your "yard waste" container or regular trash, to dispose. (If you're a gardener, bunny's litterbox waste makes great compost!) Wash the box, and if urine build-up occurs in the bathroom end, pour in some plain white vinegar to soak it clean. Rinse, wipe dry, then add fresh litter and hay.

Bunnies Enjoy Their Litter Boxes: Once introduced and used to being given fresh hay in a clean box, your bunny will grow to love it! He will nibble hay nearly 24 hours a day - important for good bunny digestion - and may even burrow under it searching for the most choice bits.

Finally, it's important to remember to use bunny-safe litters in your bunny's box. Clay, or clumping litters for cats can be dangerous to bunnies who may ingest some of their litter while eating hay. Pine, cedar, or other aromatic wood shavings may also be harmful to bunny's health. Sticking with a simple, paper-based, recyclable litter provides bunny with a safe litter and one that's also environmentally friendly.

If, after setting up your bunny's litterbox in this manner, you still have some problems with bunny using his box, try some of our litter box training tips.

LITTER-TRAINING YOUR BUNNY

(House Rabbit Society 9/96)

By nature, rabbits choose one or a few places (usually corners) to deposit their urine and most of their pills. Urine-training involves little more than putting a litterbox where the rabbit chooses to go. Pill training requires only that you give them a place they know will not be invaded by others. Here are some suggestions to help you to train your rabbit to use the litterbox.

Age. Older rabbits are easier to train than younger rabbits, especially babies. A rabbit's attention span and knack for learning increases as they grow up. If you have a baby, stick with it! And if you are deciding whether to adopt an older rabbit, or litter train your older rabbit, go for it!

Spay/Neuter. When rabbits reach the age of 4-6 months, their hormones become active and they usually begin marking their territory. By spaying or neutering your rabbit, he will be more likely to use his litterbox (as well as be much healthier and happier).

Types of litter. House Rabbit Society recommends organic litters, made from alfalfa, oat, citrus or paper. (Some brands to look for: CareFresh, Citra Fresh, Cat Works, Cat Country, Critter Country) Stay away from litters made from softwoods, like pine or cedar shavings or chips, as these products are thought to cause liver damage in rabbits who use them. Another approach is to place a handful of hay in each box, or to simply use hay as litter. Obviously, you need to change the hay fairly frequently (daily), since your rabbit will be eating it.

The cage. Use a cage large enough to contain a small litterbox (along with bunny's food and water bowls, toys, etc.) and still allow enough room for the rabbit to stretch out. Place the box in the corner of the cage that he goes in. With a litterbox in the cage, when the rabbit is confined to his cage when you're not home, cage time is learning time.

Pills vs. Urine. All rabbits will drop pills around their cages to mark it as their own. This is not failure to be litter-trained. It is very important for your rabbit to identify the cage as her property so that when she leaves the cage for the bigger world of your house, she will distinguish the family's area from her own and avoid marking it. To encourage this, make the rabbit the king of his cage. Try not to force him in or out of it --coax him. Do not do things to his cage that he doesn't like, or things to him that he doesn't like while he's in the cage.

MEDICAL INFORMATION, PROBLEMS & VETERINARY CARE

(by Susan A., Brown, DVM, Midwest Bird and Exotic Animal Hospital; and *compiled from House Rabbit Journal of the House Rabbit Society*)

We have website articles and links available that cover medical problems encountered by pet rabbit in detail. I would encourage you to ask your veterinarian for information on a specific topic that interests you. As mentioned before, the number one group of diseases that we see in rabbits is caused by an inappropriate diet and most are completely preventable. The following is a brief discussion of a few of the medical conditions that you should be aware of.

Neutering/Spaying - Uterine adenocarcinoma is a malignant cancer that can affect female rabbits over two years of age. The best prevention for this disease is to remove the reproductive organs (ovaries and uterus) in a surgical procedure commonly called a spay. The procedure can be performed in females over four months of age. Spaying a rabbit also prevents pregnancy and can help control some aggressive behavior.

Male rabbits can also develop disease of the reproductive organs (the testicles) but with much less frequency than females. However, some male rabbits have a tendency to become aggressive in their "adolescent" years (8-18 months of age) and can also start spraying urine outside the toilet area to mark their territory. Surgical removal of the testicles, called castration, can control these behaviors if it is done before the behavior occurs or shortly thereafter. Male rabbits can be neutered anytime after four months of age.

Dental Disease - Dental disease can be the result of a variety of factors including trauma to the face, genetics (jaw is too short or malformed such as seen in the lop-eared breeds of rabbits), nutritional disease, infectious disease and diet. Rabbit ancestors ate a diet that was tough and abrasive therefore they developed teeth that grew throughout their lives. Without this constant replenishment the teeth would wear down quickly and the rabbit would be unable to eat and eventually die. Any condition that causes a rabbit's teeth to be worn down improperly or causes malalignment or the death can result in serious dental disease.

The best prevention for dental disease is a healthy diet of grass hay and green foods. But even with this good diet, there are still rabbits that develop disease due to other factors, particularly genetics. The treatment of dental disease is based on the cause and severity of illness. Your rabbit should have a dental examination performed by a veterinarian at least once a year. **You should never attempt to trim a rabbit's overgrown teeth without consulting your veterinarian.** An improperly performed tooth trim can lead to serious dental disease.

Loss of Appetite - Rabbits are little eating machines and if you note that your pet has changed his/her eating habits, there is cause for concern. The most common reason a rabbit stops eating is in response to pain somewhere in the body. The rule of thumb regarding the seriousness of the loss of appetite is as follows:

- **Loss of appetite but otherwise acting normal should be investigated within 48 hours.** Some rabbits may go through a slow down and then pick up again in a day. The key here is that the rabbit is still active and alert is still be producing stools
- **Loss of appetite accompanied by obvious lethargy or depression should be considered an emergency and should be investigated immediately.** This can be a sign of an intestinal obstruction or toxin ingestion. Another important sign is that no stools are being produced.

Respiratory Signs - Rabbits can exhibit sneezing, coughing and excess tearing. Not all these signs are related to respiratory disease. More common causes include environmental irritants (perfumes, sprays, cooking fumes, ammonia fumes from accumulated urine in toilet area, fabric softener on bedding, dust), poor air circulation, damp environment, hot environment and dental disease. Please consult your veterinarian if your pet is showing the signs listed above.

"Hairballs" - Hairballs are often cited as a reason for rabbits to stop eating. **The problem is not hair (which is always present in a normal rabbit's stomach due to grooming) but abnormalities in GI tract motility.** A rabbit on a healthy diet of grass hay and green foods will not have a problem with this "disease".

The only exception is that, rarely, longhaired breeds of rabbits such as Angoras and Jersey Woollys, can accumulate an abnormal amount of hair in their stomachs even if they are on a good diet. Brush these breeds regularly to prevent the ingestion of large amounts of long hair. Remember that these rabbits do not have the normal rabbit hair coat of the ancestral rabbit so we humans have artificially created this problem!

Diarrhea - True diarrhea, where all the stool being passed is purely liquid, is very rare in the rabbit. More commonly we see a situation where the rabbit has both normal and soft pudding-like stools in the toilet area. This is not diarrhea, but a problem with GI motility usually caused by an inappropriate diet.

If you should notice true diarrhea in your pet, you should consider it an emergency situation and consult your veterinarian immediately.

Urinary Disease – The normal color of rabbit urine can range from yellow to dark orange-red. The color comes from plant pigments in the food or from normal pigments produced in the wall of the bladder. The urine can be clear or cloudy with a white precipitate. The white precipitate is excess calcium excreted through the urine. Rabbits can develop disease of the bladder or kidneys and may exhibit signs such as blood in the urine, straining to urinate, inappropriate or frequent urination, or the complete inability to urinate. If your pet is exhibiting any of these signs, please consult your veterinarian immediately. **The best prevention for urinary disease is an adequate water intake, which is accomplished through the feeding of green foods and providing fresh water daily.**

Red Urine

Rabbits urine varies in color from clear to yellow to brown to bright red. This is usually not a cause for alarm UNLESS there are additional signs such as sitting & straining to urinate, loss of appetite or a temperature. When you see red urine don't panic, just keep your eyes open for other signs that might indicate a problem. The red color will usually be gone in a day or two, but can last for a much longer time. If you're in doubt, your vet can test to see whether or not there is blood in the urine.

Amoxicillin Danger

Never let a vet give your rabbit amoxicillin. (It is an antibiotic and is recognizable as a pink liquid that smells like bubble gum. It is killing a very large percentage of the rabbits that receive it.) All drugs in the penicillin family are bad for your rabbit as they kill the "good" germs in the rabbit intestines and can cause other organs to malfunction. There are other very effective antibiotics that can be safely given to rabbits, such as Baytril. Occasionally a rabbit can't tolerate one antibiotic. For instance they may stop eating or experience diarrhea, and another antibiotic will have to be tried instead.

Cedar Shavings

These are very bad for your rabbit and other pets. "Aromatic hydrocarbons from cedar bedding materials can induce biosynthesis and hepatic microsomal enzymes" which are known to cause liver disease. (Quoted from the U.S. Department of Health and Human Services guide for the care of laboratory animals. Please pass the word to pet shops and others who carry this material for small animals. If they won't use it for lab animals we sure don't want it for our house rabbits. Use organic litter for the litter box and put newspaper in the tray if you have a cage for your rabbit.

Spay/Neuter

The House Rabbit Society has had over 850 (as of March 1991) rabbits spayed or neutered with one reported death from anesthesia. That's .1%, not 10% or 50% that some veterinarians quote as deaths due to anesthesia. To a knowledgeable vet a rabbit neuter (male) is relatively simple and quite safe. A rabbit spay (female) can be dangerous and life threatening if improper technique or general anesthesia is used. If the female is over 18 months old it is recommended that blood tests be done to assess liver and kidney function prior to general anesthesia.

Why Spay/Neuter?

80% of unspayed females (some statistics quote as high as 95%) will get uterine or ovarian cancer between two and 5 years of age. Preventing cancer by spaying your rabbit will give her the potential to reach her possible life span of 8-10 years of age. Some rabbits that I'm aware of have lived to be 16 years old.

Upon reaching sexual maturity the male rabbit will often become a real nuisance. He will fight with other males. He will fall in love with your slippers (both off and on your feet) and will spray you, your slippers and other items that he wishes to make his very own. Neutering has completely stopped that behavior in all of the males that I've had altered, although it's probably not a guarantee.

Amputations

Rabbits can live as amputees. You may have to help them off and on the couch, but if an accident or illness causes you to make a decision to amputate or to consider euthanasia, please also consider that they can get along just fine on (for instance) just 3 legs.

Paraplegic Rabbits

It does not happen often, but it is not uncommon for a rabbit to break their back. Not everyone can put the time and energy into caring for a paraplegic rabbit, but be aware that it is possible for a paraplegic rabbit to live out its life with you. If it's an only rabbit, you might even consider getting it an older, quieter rabbit as a friend to help with the grooming. I can put you in touch with other people living with this type of friend.

Teeth

Rabbits teeth can be misaligned. This condition is known as a malocclusion, which means that their constantly growing teeth do not wear properly. If the misalignment is bad, the teeth will need to be clipped periodically so that the rabbit can eat. One of my rabbits teeth must be clipped weekly, but it is usually required only once every 2 to 4 weeks. Your veterinarian can do this for you or show you how to clip your

rabbits teeth at home. The misalignment of the front teeth can be easily seen. The back teeth usually cannot be seen and the veterinarian may have to anesthetize the rabbit in order to check their molars. One indication that their back teeth may be a problem, is a wet chin that is caused by drooling.

Hairballs

Rabbits shed their hair every 3 months. Every second shedding is light, followed three months later by a heavy shedding. This is the largest cause of problems and deaths in rabbits. You **MUST** brush & comb your rabbit to get the hair off of them when they start to shed. Rabbits groom themselves like cats and will ingest all of the loose hair on themselves and their rabbit companions. They must have access to HAY 24 HOURS A DAY (do not give the small compressed hay blocks as the fiber is too small and therefore not helpful) as well as plenty of exercise, in order to help the hair that they do ingest to pass through their systems. The hay will not eliminate the need for brushing. Rabbits that ingest carpeting and other material may also suffer from the same symptoms.

The first sign of hairballs (or rabbits having an unusual amount of foreign substance in their stomach): Droppings will get smaller and will often be strung together or will have hairs or pieces of carpet fiber showing in the round droppings. As time goes on, the rabbits stomachs will get larger and appear to be quite fat, but when petting or rubbing it's back, you'll begin to feel the bones as it loses weight on it's way to starving to death.

*Treating the first signs of hairballs is controversial, please call your vet if you ever have a problem, but the **first thing to do is to get them to eat as much roughage as they will.*** Hay, tree branches, blackberry vines (stickers and all), etc. Some may suggest to give your rabbit Petromalt or Laxatone (2 brand names of a cat hairball remedy) once a week when not shedding and then daily or twice daily when they shed. Some rabbits like the taste and will lick it from the container. For other rabbits you can smear it on the top of their paw and they will (usually) lick it off. If this gives your rabbit diarrhea then don't give it to him. Again, there is some controversy over this treatment in rabbits.

Surgeries

Food and water should NOT be removed from a rabbit the evening before surgery! Ignore this direction if given by the front office staff and discuss this with your vet if the instructions come from him/her. Rabbits cannot throw up and possible vomiting is the reason that food is removed from cats & dogs. It is harmful to the rabbit and causes a longer recovery time if food is removed. The rabbit should also be tempted to eat as soon as they are awake to assist with the recovery process.

Parasites

Rabbits can get the common dog or cat flea. Be very careful about the products you use to treat the home & yard, as well as the products you use on your rabbit. If the yard is treated do not allow Your rabbit on it for at least a week and then water it thoroughly to wash off any residual chemicals. Use a spray or "bomb" that contains "pyrethrins" and "Precor" (methoprene). Flea powders labeled for use on kittens that contain pyrethrins can be used.

A mite that lives on the skin dander of rabbits will cause your rabbit to scratch and if left untreated will eventually develop thick crusts on their bodies. An injectable drug called Ivomec or Ivermectin can be given twice, 2 weeks apart, to eliminate this problem. A third injection 2 weeks later may be necessary for a particularly heavy case of skin mites.

Rabbits can die if the ivermectin dosage is not correct, so for you home treatment people, please see your veterinarian for this one.

Earmites cause rabbits to shake their heads frequently and scratch at their ears. If left untreated a middle ear infection could develop which can cause a problem with their balance. Ivomec/Ivermectin is again the preferred treatment, 2 injections given 2 weeks apart.

An internal parasite called coccidia can infect the small intestines. Symptoms can be loss of appetite to chronic diarrhea and occasionally death. A rabbit is considered to have diarrhea if the droppings are not firm and round. If the droppings are round but squish when you pick them up, your rabbit has diarrhea. The test for coccidia seems to be the one test that veterinarians routinely perform, but I have yet to have one test positive.

It's usually unnecessary, but might help your peace of mind to have your newly acquired rabbit tested for the above parasites. But once you have your rabbit, if you keep his home clean these shouldn't be a problem.

Veterinarians: How To Choose A Vet For A Rabbit *(compiled from the San Diego House Rabbit Society)*

The time to find a veterinarian is now, not when your rabbit is sick and you are forced to take what you can get. A good place to start in finding your rabbit's veterinarian is to ask for recommendations from your rabbit adoption personnel, other rabbit owners and rabbit special interest groups (such as the House Rabbit Society).

Then move on to interviewing the veterinarians. The secret here is not to ask "Do you see rabbits?" but, rather, "Who in town should I take my rabbit to?" If the vet volunteers "We see rabbits," jot down his or her name. Take the time to call around in a radius from your home that you feel would be close enough to take your rabbit in case of a problem. Select two or three and call for an appointment to meet them. Most hospitals charge for an office visit, but some waive the fee for a quick non-medical consultation.

Don't be afraid to ask questions. You need to have a way to discern his or her level of knowledge and experience with rabbits and, just as important, your ability to communicate with each other.

A good rabbit veterinarian will have a working knowledge of rabbit anatomy and physiology, nutrition and the common diseases and syndromes of rabbits. Rabbits should make up a sizable part of the vet's practice. Unless you find a specialty practice, it is unlikely that rabbits will make up a significant portion of the patients, but 10 percent would be an acceptable minimum.

Ask what special equipment and services the hospital offers for rabbits. The "standard of care" should include the use of isoflurane anesthesia, the ability to trim incisor teeth using a dental drill (not toe-nail trimmers) and, preferably, the ability to house the rabbits away from barking dogs and the odors of cats.

When seeking details, ask open-ended questions. For example, don't ask, "Do you use isoflurane?" Instead ask, "What type of general anesthesia do you use for rabbits?" "How would you fix overgrown incisor teeth?" "What housing arrangements do you have for rabbit patients in your hospital, particularly in relation to other animals?"

A critical question is "What oral antibiotics do you commonly prescribe for rabbits?" If the answer ends in "-cillin" (penicillin, ampicillin, etc.), beware. Oral (but not injected) "-cillins" are deadly to rabbits and you need a vet who knows that.

Finally, ask about prices, but don't let this be a deciding factor. Finding a knowledgeable veterinarian with whom you feel confident and who can communicate well with you can be worth paying the extra price.

After finding a vet, your next goal is to maintain a relationship with this doctor. Although rabbits don't require regular vaccinations, they should have an annual physical exam. This exam can help detect problems early and help you plan health management as your furry companion ages.

Unless you've adopted through the House Rabbit Society (or Brambley Hedge Rabbit Rescue), which provides companion animals who are already spayed or neutered, you will need a vet to perform these non-emergency surgeries.

Male rabbits should be neutered (also called orchectomy or castration) to alleviate urine marking and sexual mounting (mounting may recur intermittently as a behavior to demonstrate dominance).

Female rabbits have a high incidence of uterine cancer, hence they should be spayed (also called ovariectomy or OHE). This procedure is safer and easier on the rabbit if performed while she is young. We recommend surgery between the ages of four months (when most rabbits become sexually mature) and one year. Rabbits may be spayed at an earlier age; however, no studies have been done to show the effects of spaying prior to sexual maturity.

Whoever you choose as your veterinarian, for the sake of your companion rabbit, be sure that vet has a good knowledge of rabbits.

►► **Addendum prepared by Brambley Hedge Rabbit Rescue.**

Neutering: *A male can be neutered within a week of the testicles descending. On smaller breed rabbits (such as dwarfs), this may be as early as 12-13 weeks, while the larger breed rabbits (such as New Zealands and the Flemish) may experience testicle descent closer to 14-16 weeks.*

Phoenix/Metropolitan & Tucson Vet List

We have a list of rabbit vets on our website which is periodically updated (<http://www.bhrabbitrescue.org/vet.html>). We also supply a list of spay and neuter clinics which can be found on our website at <http://www.bhrabbitrescue.org/spay.html>. As a preview, here are several of the vets known for treating rabbits:

Dr. Alicia Ruiz
Central Phoenix Animal Hospital
25 West Thomas Road
Phoenix, AZ
(602) 277-5155

Dr. Donald Holmes
Pecan Grove Veterinary Hospital
655 W. Warner Suite #111
Tempe, AZ 85284
(480)598-3669
*Mention Brambley Hedge Rabbit Rescue
for a 10% Discount on first visit*

Dr. Parva
Dr. Pamela Ford
Arizona Animal Wellness Center
3317 South Higley Rd., Suite 101
Gilbert, AZ 85297
(480) 988-3660

Dr. Carmen Bastek
University Animal Hospital
2500 S. Hardy Drive
Tempe, AZ 85282
(480) 968-9275

Dr. Brad Rosonke
Hillside Animal Hospital
11495 N. 136th Street
Scottsdale, AZ 85259
(480) 391-7297

Dr. Richard Panzero
River Animal Hospital
5615 East River Road
Tucson, AZ 85750
(520) 577-3100

Brambley Hedge does not endorse any veterinarian or their practice.

There are veterinarians who may not be specifically trained for treatment of domestic rabbits. If a veterinarian is not keeping upon the available literature he/she will not be aware of the latest antibiotics or the proper anesthesia to use, etc. We have one list of veterinarians that we recommend for spay/neuter surgeries and another list of veterinarians that are educated for rabbit medicine. Unfortunately this is not a very long list and it has taken us considerable time to locate qualified doctors. If we give you a doctor's name within a clinic, ask for that doctor when you make an appointment.

SAFE GROOMING & HANDLING TECHNIQUES

(by Susan A., Brown, DVM, Midwest Bird and Exotic Animal Hospital)

Handling

There are a number of ways to pick up your pet depending on how calm he/she is and his/her size. **The main thing to remember is to always support the hindquarters to prevent serious spinal injuries.** Rabbit backbones are fragile and can fracture if the hind legs are allowed to dangle and the animal then gives one strong kick. Unfortunately these injuries are usually permanent and frequently result in the euthanasia of the pet, so the best policy is prevention. Never pick up a bunny by his/her sensitive ears because it's very painful and totally unnecessary! It is better to grasp the loose skin over the shoulders or scoop up under the chest and then place your other hand under the back legs to lift your bunny from the floor. **Work near the floor when first learning to handle your pet so that if he/she jumps out of your arms there isn't a chance for a fall.**

Ask your veterinarian or an experienced rabbit handler about other methods used to handle rabbits. Some restraint methods are particularly useful when your rabbit needs to be medicated. Wrapping your pet securely in a towel is one easy method and your veterinarian can instruct you on the proper procedure.

(Adapted from House Rabbit Society, Compiled with the assistance of Dr.Carolynn Harvey, DVM)

Overview

Rabbits can act as if they're hardy creatures, but they are, in fact, extremely delicate—from their skin to their spines to their external systems. Care must be taken to maintain their good health. The following basics are necessary to know in order to groom rabbits safely and to help keep them healthy. For information specifically geared towards the caring for long-haired rabbits, see the reprint of the House Rabbit Journal article, "The Well-Groomed Rabbit."

Shedding

Rabbits shed every 3 months. Every alternate time they'll have a light shedding that may not be very noticeable. Next they'll have a heavy shedding that you will not be able to escape.

Rabbits are fastidious groomers. They insist on being clean & tidy and will lick themselves like cats, and like cats, they can get hairballs if they ingest too much hair. Unlike cats however, rabbits cannot vomit. If hairballs are allowed to form they can become gigantic masses of tangled hair & food and will block the stomach exit, causing the rabbit to starve to death while his stomach appears to be very fat.

Rabbits need to be brushed at least weekly. In addition to removing any loose hair, this weekly brushing session helps prepare them for the multiple daily brushings that they must undergo when their heavy shedding begins. Rabbits will shed in different ways. Some rabbits will take a couple of weeks or more to lose their old coat of fur. Other rabbits will be ready to get rid of their old coats all in one day and these rabbits are the ones that cannot be neglected once they start shedding. You can often remove a very large percentage of hair by just pulling it out with your hand. But, however you remove it, remove it as soon as possible or your rabbit will do it during grooming.

Bald spots on rabbits are quite common when they are shedding. I have one Angora rabbit for instance, that gets totally naked except for her face and feet. But, short haired rabbits can do the same thing. If these bald spots occur from shedding, they will begin to grow back within a week or two.

Long Haired Rabbits

These types of rabbits are truly wonderful to look at, but require a lot more attention than their short-haired cousins. We recommend that you use your scissors and keep their hair trimmed to one inch or less, otherwise you may be fighting hairballs most of the time.

EXPERT HELP: If you are not comfortable with the above you can have someone, maybe your veterinarian, show you how to do all of the above tasks.

Fleas

Cat flea products are generally safe for rabbits with fleas. It's better to stick with powders and sprays. Carbaryl is the ingredient preferred by the House Rabbit Society's veterinary advisors. One must be hesitant to treat rabbits' fleas aggressively, because the cure can be more stressful than the infestation, so flea baths and dips are not recommended.

A flea comb is a non-toxic device, which takes more patience, but is both physically and psychologically rewarding. Most rabbits learn to love the attention of being flea combed, and it can be used as a supplement to or as your main flea-control program. If you want to control fleas in the environment with sprays or a flea bomb, do only one room at a time and keep your rabbits out of that room for at least 24 hours.

Baths

Although some bunnies grow up swimming in the family pool and going on camping trips where they paddle around in the lake, most rabbits are not used to this routine and would find even an occasional bath quite stressful. NEVER—unless your veterinarian advises it to bring down a fever—should you give a sick rabbit a bath. Because seemingly healthy rabbits can have undiagnosed problems, it's best not to

subject them to the stress of a bath. If your rabbit is very badly infested with fleas, there's a good chance that he is already compromised and may go into shock when bathed. Also, a thoroughly wet rabbit takes a very long time to dry, so spot cleaning the dirty area is better than an over-all bath. Normal rabbit body temperature is 102. Since they are subject to heat stress, use a warm dryer, not hot.

Mats

Rabbit skin is delicate and highly susceptible to cuts, so mats should not be cut off with scissors. Instead, use a mat splitter or mat rake to take the mass apart. Bunny fur usually requires a finer blade than most cats and dogs.

Skin

Scratchy, flaky skin with bald patches is usually a symptom of skin mites or an allergic reaction to fleas. Cat flea powder clears up either condition. A veterinarian should be consulted for other skin irritations.

Feet

House rabbits who spend all of their time in homes with carpeting and linoleum periodically need to have their toenails trimmed, in the same way as dogs and cats.

Because of risk of infection, declawing is definitely NOT recommended for rabbits.

If excessive digging or scratching is a problem, then a large box of hay or straw, where bunny can pursue these activities, may help.

If the padding (fur) on the feet is worn down, exposing inflamed or callused skin, then soft dry resting pads (rugs) should be provided. Exposed skin that becomes urine burned or broken is very likely to infect. Take extra care that rugs and litterboxes are kept clean and dry.

Incontinence

A rabbit with a urinary infection or a disabled older rabbit may not be able to project urine away from the body. The result may be saturated fur around the hindquarters. For milder cases, shave the areas that get wet so the skin can dry (remember, rabbit fur takes a long time to dry), rinse the affected areas daily, and follow up with a dusting of baby powder or corn starch. For more infirm cases, disposable baby diapers-turned backwards so the tabs are up-do wonders for keeping the moisture away from the skin. (Huggies Step 2 work well for an 8 pound rabbit.)

Ears

Ear wax can be lifted out with a cotton swab, being careful not to push on wax in the canal, or you can try a mild ear cleaner containing Chlorhexadine, such as Nolvasan Otic. For ear mite infestation, apply a topical medication such as Mitox. The veterinarian may also prescribe Ivermectin.

Teeth

Rabbits teeth grow continuously and must be checked to ensure that they are wearing down properly. While you're brushing your rabbit or clipping his nails also look at his teeth to make sure there is not a problem. Bunnies with straight teeth will keep them worn down with everyday gnawing and chewing. Buns with malocclusions, or crooked teeth, will need to have their teeth kept trimmed with guillotine-type clippers. If this occurs and is left untreated, the rabbit will not be able to eat and could starve to death. Your veterinarian can show you how to clip a rabbits teeth or they can clip them for you.

Nails

Rabbit nails can grow to be very long and sharp and will be uncomfortable for the rabbit. If the rabbit has light colored nails they are very easy to trim. You can see the blood inside the nail and you clip just before that point. The dark colored nails are harder to see where they should be clipped but it is still visible. People are often afraid to clip nails for fear that they will cause the rabbit to bleed. You can purchase a product called Kwik Stop to keep on hand for this problem, but I've found that just holding pressure with a cotton ball works better for me. Your veterinarian will also clip nails for you. They should be checked every 6-8 weeks. *(Any time that Brambley Hedge Rabbit Rescue group is at an adoption event at Petsmart we will trim nails for you.)*

Eye Discharge

Watery eyes or an eye discharge needs to be diagnosed by a vet. In addition to any medications or eye drops, the cheek needs to be kept dry and clean so the area will not become chafed nor the fur peel off. Clean tissues will absorb mild wetness. Ophthalmic saline solution (what people use with their contacts) carefully poured onto the cheek will crystallize the tears so that they can be removed with a clean flea comb. A touch of prescription anesthetic powder on a finger can be applied to the area if there are painful lesions.

Rabbits can act as if they're hardy creatures, but they are, in fact, extremely delicate—from their skin to their spines to their external systems. Care must be taken to maintain their good health. The following basics are necessary to know in order to groom rabbits safely and to help keep them healthy. For information specifically geared towards the caring for long-haired rabbits, see the reprint of the *House Rabbit Journal* article, "The Well-Groomed Rabbit."

Approaching a Rabbit

The safest initial approach with rabbits is to begin by stroking the top of the head. Do not offer your hand for a bunny to sniff the way you would to a dog, because most seem to find this gesture offensive and may attack (lightening fast lunge with a snort). Most buns also do not like having the tips of their noses or chins touched. A rabbit doesn't see in front of its face, they see from the side of their face. Their feet also tend to be ticklish.

Hypnosis

Often a bunny can be "hypnotized" by cradling him on his back in your arms or across your lap, tipping the head backwards until he's "out" It's helpful to do this when cleaning bunny's sensitive areas, like the face, feet, or under the tail, If the hind feet seem to be vibrating, touching them will stop it.

Lifting

Bunnies should never be lifted by the ears or scruff. See the HRS handout, "Getting off the Ground," for safe ways to lift and carry rabbits.

►► Addendum prepared by Brambley Hedge Rabbit Rescue.

Brambley Hedge Rabbit Rescue recommends trimming rabbit nails every 4-6 weeks. Also it is a time that the scent (aguanal) glands (also called vents) should be cleaned as well. Our volunteers at Brambley Hedge Rabbit Rescue will gladly show you how to do these items yourself, or we will do them for you at no charge, any time that we are at Petsmart for an adoption event. Please check our website calendar for our dates at Petsmart (www.bhrabbitrescue.org)

SUGGESTED TOYS FOR RABBITS

Buns Just Want To Have Fun!

(by Stephen Guida, member of Brambley Hedge Rabbit Rescue)

Anyone who has spent any time at all observing a pet rabbit or even wild rabbits comes away with an appreciation of the intelligence these long-eared wonders possess. Along with this intelligence comes an infectious zest for life and an amazing capacity to have fun. And why shouldn't they? Everyone agrees that dogs and cats enjoy playtime and having fun. If you've ever thrown a toy for a dog to fetch or tossed a wad of paper for a cat to chase, you can certainly attest to the pleasure they get from playing a game with a human companion. Rabbits are at least as intelligent as dogs and cats, so the question is - do rabbits enjoy recreation and playing with toys? And the answer is a resounding yes!

In a two-year study, staff members, technicians, and veterinarians at U.C. Davis, School of Veterinary Medicine observed that cage enrichment (in the form of toys and/or another rabbit) "increases the animal's activity, suggesting enhanced psychological well-being..." They found a direct correlation between a stimulus-rich environment and a higher level of well-being, both physical and psychological, for the rabbits observed. The creative use of toys can extend your rabbit's life by keeping him interested in his surroundings, by giving him the freedom to interact with those surroundings, and by allowing him to constantly learn and grow.

Your rabbit needs safe activities to keep her body in shape as well as her mind. She needs things to climb on, crawl under, hop on and around, dig into, and chew on. Without outlets for these physical needs, your rabbit may become fat or depressed, or may create jumping, chewing, or crawling opportunities with your furniture.

So what kind of games do rabbits like to play? To answer that question we need to understand how animals in general play. Puppies will do a lot of wrestling and rough playing, reflecting their pack-animal instincts. Kittens will do sneak-up-and-pounce activities which derive from their natural hunting abilities. Older dogs love to fetch things, indicative of their hunting and retrieval instincts. Play behavior in animals starts early in life and is a reflection of traits they are born with and training for skills they will need later as adults.

In almost all cases, a rabbit's behavior is determined in large part by their natural role as a prey species. They are born with a strong instinct to spot and avoid predators of all kinds. Their acute hearing and amazing peripheral vision serve them well in detecting danger and their speed and agility help them avoid capture. It's no surprise that rabbits have a natural talent for chase-me games. A pet rabbit who has the run of the house will often playfully dart away from you only to turn around, possibly sit up in that cute prairie-dog pose and look quizzically back at you as if to ask, "Aren't you going to chase me anymore?" Rabbits like to play pursuit games and show off their skills at evading capture, but care should be taken not to go too far and frighten the bunny with overzealous chasing. You want your bunny to have fun and enjoy himself, not be terrorized and fearful.

So, choose games with your rabbit that reflect and take advantage of their natural instincts and behaviors. Rabbits love tunnels and enclosed areas they can crawl through. Many of them love to jump up on high areas, such as tabletops and boxes, to get a better view of everything around them. Make sure that whatever you allow your rabbit to jump up on is safe and sturdy and the danger from falling is minimal. Combinations of tunnels and cardboard boxes to jump on and run through would make a great play area that will keep you and your bunny entertained for hours.

Handling a rabbit during play requires special considerations. A rabbit is more sensitive than the average cat or dog and frightens more easily than other pets. Ironically, she can also be aggressive, but this behavior usually surfaces only when she feels threatened. For example, if you stick your hand into the cage too suddenly to take your rabbit out for playtime, she may nip at your hand. Why? Because you may have startled her, or interrupted her at the wrong time. Rabbits are quite territorial and don't enjoy having their space invaded by uninvited guests.

During exercise, your rabbit may become over-stimulated. Don't "roughhouse" with her the way you might with a dog or a cat. She may feel the need to protect herself by biting, scratching or kicking you. Her behavior is not because that she's mean, it's just a consequence of being a prey animal which makes her need to feel safe during play.

Another thing your rabbit will like is for you to get down on the floor on the same level with him or her. Remember, to your rabbit you are a very tall, strange-looking being with big feet and a tiny head. Getting down on the floor for some scratching, stroking, petting and nose-to-nose intimacy tells your rabbit that you are willing to come down to her level to play, and she will certainly enjoy and appreciate that.

Grooming time is another opportunity for playtime with your rabbit that serves several worthy purposes. Not only will the brushing and combing make your rabbit look and feel better and reduce the amount of fur in their surroundings, but it is also a chance for quality time with you and your pet. Rabbits know when they are being groomed and most of them appreciate the care and attention. Giving your bunny a gentle massage is also a great bonding experience.

Aside from games, your bunny will enjoy having plenty of toys around to pass the time when their owners are away and they may not have a whole house to play in. As usual, the best toys are those that appeal to a rabbit's natural instincts or serve some purpose in keeping our four-legged friends happy and healthy.

Any rabbit owner knows that bunnies are natural chewing machines. Indeed, their constantly-growing front teeth make chewing activities necessary, to keep these teeth trimmed down to a healthy length and to exercise and strengthen jaw muscles. Your rabbit will thoroughly enjoy a wide variety of things that

they can safely chew. Some wood products available at pet stores, such as natural wood blocks (no pressure-treated wood, plywood, particle board or pressed board) are specially made to satisfy these chewing urges, or you can find untreated or unvarnished pieces of hardwood or tree limbs (with the exception of peach trees) which your rabbit will enjoy chewing for hours. Other things they will enjoy chewing are sea grass mats, available at some home stores or arts-and-crafts outlets, and rice or maize mats, also available at home decorating stores. If you do buy grass mats, be sure to select the ones that are not reinforced with nylon thread which the bunny can chew and swallow.

Most domestic rabbits have a real passion for shredding cardboard and newspaper and they are things that your bunny can enjoy safely. A cardboard box with holes cut into it can provide endless hours of fun for your pet and, if you put hay or newspaper or some smaller toys inside, will be irresistible to your bunny. Rabbits will gleefully rip them apart and may actually tear the entire box to pieces, in which case you just go out and get another one! Multi-story cardboard condos or castles, such as the ones available from Brambley Hedge Rabbit Rescue, are specifically made for rabbits out of unbleached and untreated cardboard, are a real favorite with rabbits of all ages.

Pet stores are filled with pet toys, some suitable for rabbits and some not. Generally, hard plastic toys intended for parrots can be enjoyed by rabbits, as long as the plastic is thick enough that the bunny can't bite through them. Wood blocks and bells that hang from the top of the cage are also fun for rabbits, although those with nylon cords or ropes should be avoided. Bunnies love to play with anything that makes noise, and the cat section of the pet store will usually have a lot of good things, such as wire balls with a little bell inside, or a hard plastic toy barrel with a noisemaker inside. Generally stuffed animals or plush toys are not good choices since there is a chance the bunny will chew into them and swallow some of the stuffing. Some toys which are intended for human infants also make great bunny toys, such as giant plastic keyrings and hard plastic rattles.

Possibly the most fun toys are those that you make from everyday items you can find around the house. Untreated straw or wicker baskets, Mason jar lid rings, empty metal soda cans with some marbles or pebbles inside, baskets filled with old newspaper, old telephone directories, and cardboard centers from toilet paper rolls are all excellent things to engage your rabbit in play and let her silly side come out. Old magazines can also be used for shredding as long as they don't have lots of glossy color photo pages. The possibilities are almost endless and your rabbit may delight you in turning some things into toys that you might not have considered. In all cases caution should be taken so that these newfound toys are safe for your bunny - no sharp edges or small parts that could be swallowed, no paint or chemical coatings, and nothing that has been in contact with hazardous or poisonous materials.

While toys and games are important, they're not substitutes for your time and attention, or for the companionship of other pets and family members. If your rabbit is ignored and left alone in her cage all day, he may become depressed or find a destructive outlet for his boredom and loneliness. A bored bunny is a mischievous bunny and an unhappy one, and you will find it to the advantage of both you and your beloved bunny to have a wide assortment of toys to play with and a number of fun games to enjoy together.

RABBIT SUPPLY LIST

(compiled from HRS 9/96)

In the cage:

- **Roomy cage** - with front door so the bunny can enter/exit during "free" time; deep litter tray.
- **Secured bowls** - for pellets, hay and water (or use a water bottle).
- **Litterbox and non-toxic litter** - We recommend an organic litter such as Yesterday's News, Carefresh, or Critter/Cat Country. Provide a fresh clean litter box daily, adding hay on top of one side of the litter box as an additional enticement to use the box. (Pine and cedar shavings in box or cage tray are suspected causes of liver damage and respiratory problems),
- **Newspaper** - to line the tray in bottom of cage.
- **Artificial fur or lambswool squares** - from fabric store to rest feet from wire cage floor.
- **Food/water** - unlimited high-fiber hay (Timothy hay; orchard, meadow or Bermuda grasses); very limited plain rabbit pellets. Fresh water. Fruit and vegetables in moderation (see diet guide in earlier section)

- **Toys** - plastic baby keys, empty toilet paper rolls, some hard plastic cat toys, metal canning rings. Some parrot toys that hang from top of cage. Out of cage you can provide boxes filled with hay, cat tunnels, large PVC tubes or round cement forms to run through!

Out of the cage:

- **Nail clippers** - Trim nails about once a month using cat/dog clippers.
- **Brush** - always brush loose hair from rabbit, especially during molt.
- **Flea powder** - when you see a flea problem use 5% Sevin dust or kitten flea powders that do not contain pyrethrins.
- **White vinegar** - reduces odor. Wipe down cage once a month or use to neutralize accidents. Also excellent to dissolve urine crystal build up and keep litter pan fresh.
- **Litterbox with organic litter** - as needed, one or more litterboxes available out of cage.
- **Whisk broom and dust pan** - to sweep up mistakes.
- **Bunny-proofing materials** - clear plastic tubing from hardware stores. Split tubing and insert telephone cords, wires, etc. For aggressive chewers, try PVC tubing. Can use "flex -tube" from auto parts stores. Extra litterbox or cardboard box for digging. Fill with hay or litter. Carpet sample squares for problem digging areas. Large ceramic tiles to cover problem corners and give a cool surface to sit on.

Always supervise your rabbit outdoors - Use a playpen with floor or run wire below ground level so they cannot dig out. Watch for predators do not leave unattended.

►► **Addendum prepared by Brambley Hedge Rabbit Rescue.**

In Case of Minor Health Emergencies – (However, a veterinarian appointment is always recommended.) supplies to have on hand include:

- *Neosporin or Polysporin in case of a slight cut or scratch*
- *Bag Balm – to rub on feet in the case of hock sores*
- *Infant Simethicone/Mylicon Drops – to assist with gas/bloating pain and get to a vet.*
- *Q-tips to assist in cleaning aguilal scent glands/vents.*
- *Frozen water bottles – during our hottest months in Arizona there are occasions when we lose power; keep frozen water bottles (1 for each rabbit) to lay beside rabbit in case of power outage and loss of air conditioning.*

BEHAVIOR

Rebel With Paws (from House Rabbit Journal, by Amy Shapiro)

"I don't understand it. Just this week, Fluffy has bitten the kids five times."

"I don't understand it. Peanut used to be so good about using his litterbox. Now he's leaving messes everywhere."

"I don't understand it. Flora was such an easy-going little bunny. Now all she does is dig, dig, dig. My carpet is in shreds."

"Why does Felix keep running in circles around our legs all the time?"

"The other day I found Josie pulling out her own fur and running around the house with it in her mouth!"

Adolescence-or at least the outward manifestations of it-can strike bunnies almost overnight. Your fluffy little darling's hormones switch on, and she enters a phase that can transform her and mystify the unprepared human. Here are a few of the ways to recognize, understand, and deal with your teenager.

When

Adolescence can begin as early as three months, especially in the dwarf breeds. Five to six months is the more common starting point. Generally rabbits make the transition from adolescence to adulthood at about one year.

Who Is This Long-Eared Terror?

It's no surprise that the majority of rabbits surrendered to shelters are between six and twelve months of age. In some cases, of course, the reason is that the novelty and cuteness factors have worn off. But more often Thumper's sudden change from easily controlled to impudent and assertive convinces people that they have a "mean" or "bad" rabbit. Very few of these lunging, chewing, digging, nipping guys get adopted, and what is a normal, natural, and necessary phase of life becomes a fatal disease when Thumper gets euthanized. The key word here is *phase*. If you and Thumper manage to survive adolescence together, you will find at the other end of the experience a larger, calmer version of your preadolescent pal. If you're adopting a six- to twelve-month-old rabbit, you can assume his adult personality will be a less exaggerated version of his teenage self. When I rescued Daphne, she was a confident, affectionate eight-week-old baby. When she was about six months old, it occurred to me that she was no longer following me from room to room; she was chasing me, chin thrust forward, tail up, occasionally nipping my ankle if I didn't move fast enough for her satisfaction.

Young Lust

As with humans, sexuality plays a major role in the behavioral changes that accompany adolescence. These may include spraying urine, circling, mounting, nipping, nest-building, extreme mood-swings, digging, and fighting between previously friendly rabbits (especially males). The simple cure for all of these activities, discussed in an earlier issue of House Rabbit Journal, is to spay/neuter your rabbit. General age guidelines are four months for males and six months for females. According to Dr. Carolyn Harvey, males can be neutered as soon as the testicles descend. "If I can see them, I can remove them," she assured me, when I called her about the two ten-week-old brothers I'd rescued who were remorselessly mounting their two sisters and terrorizing all of our cats. Because there is a social as well as a sexual component to many of these behaviors, and because it takes time after surgery for the hormones to stop circulating (usually two weeks for males, as much as six months for females), surgery is not an instant cure. But it is a necessary part of surviving adolescence. There are no physiological or behavioral disadvantages to spaying and neutering. And no discussion would be complete without mentioning the enormous ethical advantages. With rabbits being euthanized daily at shelters across the country, and thousands more being "set free" in fields or vacant lots, it's difficult to reconcile a love of rabbits with bringing more of them into the world. Killing even a gentle death at the hands of a caring shelter worker-and abandonment are not acceptable methods of population control.

Survival Techniques

So you've had Flopsy spayed. She's still digging your carpet, eating your rattan love seat, biting the kids when they reach into her cage, and leaving liquid and solid calling cards all over the house. The first step is to get out your old HRJs and read the relevant articles on chewing, digging, housetraining, etc. As you read, a few underlying concepts will emerge from the specific suggestions.

1) Redirect. It's much easier to tell a rabbit "Chew this" ("and this," "..., and this,") than to try to convince him not to chew anything. Look for ways that Thumper can indulge his natural inclinations -whether for chewing, digging, mounting, etc.-in ways that don't drive you crazy. Meet him halfway. Remember that from his point of view, he's being a very good bunny. Adolescent rabbits are supposed to chew, dig, mark their territory, and mount everything in sight. It's only our human perspective that puts a negative spin on the situation.

2) Set her up to succeed. Punishment doesn't work very well with rabbits, especially sassy teenage rabbits. Instead, put Flopsy in a situation where her options are limited to doing the right thing-that is, the human version of the right thing, such as digging in her sandbox instead of your carpet. Setting up for success often includes limiting and structuring her physical environment.

3) Be patient. She will outgrow all this mania. Enjoy her exuberance, laugh at her mischievousness, ponder the complexity of the rabbit psyche. Allow yourself to be infected by her joy at being alive and obnoxious and pushy. Once you've seen a rabbit kick up her heels, shake her head, leap straight up in the air and make a 180-degree turn before landing, you'll know you've been initiated into a very select society. And you'll remember why you put up with all the other stuff



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