

## **HUSBANDRY STANDARDS FOR KEEPING CAPYBARAS IN CAPTIVITY**

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### **INTRODUCTION**

The family Hydrochaeridae includes one species *Hydrochaeris hydrochaeris*. Pronunciation "kapibar`u". The name capybara refers to the "master of the grasses" according to the Guarani Indians. The first European naturalists called them water pigs or Orinoco hogs and the first of those names has carried over into their present scientific designation as hydrochaerids. Their native range occurs in Panama, to the east of the Canal Zone, and on the east side of the Andes in South America from Colombia and the Guianas to Uruguay and northeastern Argentina.

Capybaras are the largest living rodent. Head and body length is 100 – 130 cm, the tail is vestigial, shoulder height is as much as 50 cm, and weight is 27-79 kg. Average weight of captive adult males would be 50 kg and females 61 kg. The long, coarse pelage is so sparse that the skin is visible. The coloration is generally reddish brown to grayish on the upperparts and yellowish brown on the underparts. Occasionally there is some black on the face, the outer surface of the limbs and the rump.

In mature males a bare, raised area on the top of the snout contains a greatly enlarged sebaceous gland, which plays a role in signaling dominance status. They also have two glandular pockets located on either side of the anus. Male anal glands are filled with easily detachable hairs abundantly coated with layers of hard, crystalline calcium salts. Female anal pockets also have hairs, but theirs are not detachable and are coated in a greasy secretion rather than with crystalline layers. The proportions of each chemical present in the secretions of individual capybaras are different, providing a potential for individual recognition via personal "olfactory fingerprints."

Capybaras resemble cavies but they are much larger and have a proportionally shorter body. The limbs are short and the head is relatively large and broad. The ears are short and rounded and the small eyes are placed dorsally and relatively far back on the head. The muzzle is heavy and truncated and the upper lip is enlarged. The forefoot has four digits and the hind foot has three. The digits, which are arranged in a radial pattern, are partially webbed and armed with short, strong claws making them very strong swimmers. They are able to stay underwater up to 5 minutes at a time. The females have five pairs of ventral mammae.

Capybaras have several distinct vocalizations. Infants and the young constantly emit a guttural purr, probably to maintain contact with their mothers or other group members. This sound is also made by losers in altercations, perhaps to appease their adversary. Another vocalization, the alarm bark, is generally used when a predator is detected. This

coughing sound is often repeated several times, and the reaction of nearby animals may be to stand alert or to rush into the water. They also use clicks, squeaks, whistles and grunts to communicate with others in the herd.

Naturally crepuscular, resting during the heat of the day in a shallow burrow in the ground, they have become nocturnal in areas populated by humans to avoid contact. They usually live in groups averaging 10 in number or in temporary larger aggregations, which may contain up to 100 individuals and will be composed of the smaller groups. The situation does vary according to the season, groups being larger during the dry season.

## **1. Abiotic Environmental Variables**

- 1.1 **Temperature:** This species can withstand great temperature extremes and may be kept outdoors in areas with lows of 10 F. (-12 C.) as long as a heated shelter and bedding are provided. Outdoor temperatures of 90 – 100 degrees F. (32 – 38 C.) are tolerated as long as animals have access to water and shade.
- 1.2 **Humidity:** Although humidity levels in indoor enclosures should range from 40 – 70 % they can tolerate lower levels of humidity (15 – 20 %) in drier climates without apparent difficulty.
- 1.3 **Illumination:** Most owners house capybaras outdoors at least part of the year but when housed indoors, capybaras respond well to a 12-hour light and 12-hour dark cycle. Natural fluorescent or incandescent lighting is acceptable. For purposes of visibility, those owners maintaining capybaras may find useful a reverse light cycle using either red or blue light during the “nocturnal” cycle, and a bright white light for the “day” cycle.
- 1.4 **Space:**
  - 1.4.1 Capybaras may be housed outdoors as long as there is adequate shelter from extreme weather. A minimum outdoor exhibit measuring 12 ft. (3.7 m.) x 20 ft. (6.1 m.) or 240 sq. ft. (22.3 sq. m.) is adequate for an adult pair or trio but additional space will reduce stress. Pools or tanks should be provided in both indoor and outdoor enclosures. Although depth of pools could be as shallow as 3.5 ft. (1.07 m.) the norm is at least 6 ft. (1.84m) with a gradual incline. Minimum indoor holding in winter should be 3 ft. ( 0.914 m.) x 5 ft. (1.524 m.) or 15 sq. ft. (1.393 sq.m.) with access to a shallow tub or pool.
  - 1.4.2 Capybaras are social animals and are easily kept in pairs or trios containing one male and two females. Aggression is common even among females, and larger enclosures will help reduce stress. Males should not be housed together or fighting will occur. Introductions should be done carefully as bonded adults may attack or kill strange adults. Isolated individuals require enclosures similar to the standards appropriate for the primary enclosure. They may become easily stressed if housed in small areas. Pregnant

- females should be given access to a secluded area away from other animals in order to protect infants from other members of the group during birthing.
- 1.4.3 Due to their size and behavior, they do not need furniture in their enclosure for sitting or climbing. The outdoor exhibit should be well planted to give visual barriers from each other. Logs could also be incorporated as visual barriers and for chewing. Indoors you could use crates for hiding places and as visual barriers.
  - 1.4.4. When frightened, capybaras will run to escape. Their natural behavior is to run into a water source and areas in which to hide should be provided. Even a solid wood wall or stacked hay bales strategically placed within the enclosure will provide a feeling of safety.
  - 1.4.5 Substrates and resting/bedding material such as hay, soil, concrete, grass or other materials that can be easily cleaned but not ingested are appropriate.
  - 1.4.6 The addition of rocks, fallen logs, trees, bushes, leaves around the exhibit will increase the activity level. Also exhibiting them with other species will add to a more natural setting.
  - 1.4.7 Enclosures should be cleaned daily, and wet or soiled bedding removed. Pools should also be cleaned and disinfected at least weekly, more often if they defecate in the water. Capybaras normally scent mark around their living spaces (on the trees and rocks) and these may need periodic cleaning or replacement.
  - 1.4.8 Fresh water should be available at all times. Because they are semi-aquatic and may defecate in their drinking water source, drinking water containers may require cleaning several times daily. Lixit valves or metal buckets placed high enough so they cannot defecate into them reduces amount of time spent changing water.
  - 1.4.9 Outdoor enclosures may be designed with moat barriers or may incorporate fencing 6 ft. (1.8 m.) high in order to prevent escape by jumping. Many zoos exhibit them in large multi-species exhibits and keepers are able to enter the exhibit with the animals. You must keep in mind their stress levels and not crowd them.
  - 1.4.10 Documents needed for shipment should be attached to the outside of the carrier and easily obtainable. The carrier must maneuver the container in a manner to avoid physical trauma to the animal. The crate must have signage on the outside showing which end should be up.
    - 14.10.1 Wood or plywood crate should be lined with welded mesh, sheet metal, rigid plastic, strong welded wire mesh or wire mesh. The behavior of this animal must be considered. Wooden framed containers must have their joints bolted or screwed together. The whole interior must be lined to deter their ability to gnaw. Heavy gauge wire mesh ventilation openings, with a diameter of 1 in. (2.5 cm) must be present on the sides and roof, the diameter of the mesh must not permit the snout or feet of the animal to protrude. The floor must be solid metal and leak-proof. A sliding door must be provided at the front and rear of the container to give access into the container.

The front door must have a narrow gap of 1 in. (2.5 cm) at the bottom of the welded mesh so that food and water can be passed into the container, the welded mesh must be braced on the inside of the bottom. All doors must be provided with a secure fastening so that they cannot be opened accidentally.

When constructing travel containers for these animals the normal habits and movements must be considered, they must be able to move around freely and be able to stand normally. Size depends on maturity, males and females being about the same size. Only juveniles will require a smaller crate. Rounded edged food and water containers must be provided, which can hold food and water.

The floor must be covered with a thick layer of absorbent material, such as wood shavings for bedding. No additional tray is needed for transport to remove feces and urine. Just be sure you have plenty of wood chips to absorb all the urine.

PLEASE NOTE THE INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA) CONTAINER REQUIREMENT # 80 FOR LARGE RODENTS. THIS INCLUDES CAPYBARA, BEAVER, PORCUPINE AND WOMBAT SPECIES.

- 1.4.10.2 Temperatures for capybaras should range between 45 – 80 degrees F. (8 – 27 C.) If you believe the temp will be around 45 degrees F. (8 C.) add timothy hay as insulation for them to burrow into.
- 1.4.10.3 Nylon mesh needs to be utilized on containers with animals to reduce stress visually as well as reducing the “white noise” to some extent and still provide adequate ventilation.
- 1.4.10.4 Capybaras must be transported individually.
- 1.4.10.5 Due to the capybaras size, they should not be removed from the crate Without a veterinarian to tranquilize the animal first. Normally there is a zoo in most cities that are large enough to be a hub for an airline. The airline should contact the shipping zoo, who will arrange for services of a vet from the local zoo to handle any medical needs.
- 1.4.10.6 Animals do not normally require additional feeding or watering during 24 hours following the time of dispatch. If feeding is required due to an unforeseen delay, fruit or grain should be offered. You must be sure to put the feeding instructions on the container.
- 1.4.10.7 The animal must be released in an enclosure or quarantine facility suitable for normal activity. The door of the container can be left open and left in the enclosure to allow exit on the animals own timetable and to provide a hiding space for the first day or so.

## 1.5 **Water:**

- 1.5.1 Water elements should be included in the enclosure in the form of pools, streams, or tanks.

- 1.5.2 Fresh drinking water should be available at all times. Heavy crocks, metal buckets or lixit valves should be used for their drinking water. The buckets can be hung up at a level they can drink from but keeps the capybaras from defecating in the container.
- 1.5.3 Pools should be deep enough for them to submerge their body.

## 2. Biotic Variables

2.1 **Food and Water:** Enclosures and shelters should be spot cleaned daily, removing feces, soiled substrates and uneaten food. All bedding materials should be removed and the entire enclosure cleaned and disinfected at least weekly or as needed.

2.1.1 Lixits or metal pails should be used to provide cleanest drinking water.

2.1.2 Food should be offered twice per day. In nature all species feed on vegetation, primarily short grasses and occasionally fruits as available. Capybara should be offered a diet containing commercial rodent chow, monkey chow, greens (kale, endive, spinach or romaine), hay (alfalfa, alfalfa cubes, timothy or orchard grass), browse (cattails, bamboo, willow, and mulberry), and various fruits and vegetables (yams, corn, apples, banana, carrots, broccoli, peanuts raw, cantelope, or watermelon). Mineralized salt blocks should be available ad lib. Food supplies need to be adequately protected against spoilage or infestation by pests. Pest control is an Accreditation issue.

Perishable foods must be refrigerated. Measures must be taken to prevent caking of feed or molding of food if self-feeders are utilized. Food receptacles must be located within the primary enclosure in a manner to prevent competition between animals and contamination by feces and urine.

Capybara babies are precocial and may start to nibble on solid foods in as little as three days. If any need to be hand-reared, Esbilac can be utilized and mixed according to the instructions on the label. Use caution adding carbohydrates such as sugars and syrups. This should only be done on advise from your veterinarian. If the milk is too rich it can be diluted to eliminate diarrhea but the veterinarian should be informed. A syringe or baby bottle can be used for feeding milk. Check the hole to prevent a fast flow of formula into the animal's mouth which could cause aspiration. Any formula that is open to air must be used within 24 hours. Bottles Should be washed with cold water & bottle brush first to get milk residue from the bottle, followed by a disinfectant bath to soak the bottle and nipple. A solution of 1 oz. Novalsan to 1 gal. Water is adequate. Before filling bottle with fresh formula, rinse bottle and nipple well.

2.1.3 Enough food stations need to be available to avoid aggression between dominant and subordinate animals. If a large wooden tray is used, more than one adult can usually feed there without conflict. This is especially true if placed outside where there is plenty of space, if in confined areas they may need more food receptacles.

- 2.1.4 Food items can be dispersed or hidden within the enclosure to encourage natural foraging behaviors. Browse can be offered in addition to the normal diet. Bamboo, or other browse, suspended from a rope to present a challenge, can be utilized. Browse in their pool for grabbing and pulling to the side before eating is also enriching. Fruits will float and can be cut up and tossed in for the animals to retrieve.

## **2.2 Social Considerations:**

- 2.2.1 Group composition: Capybaras live in mixed age and sex groups and are quite gregarious. In the wild they can live in groups as small as 4 – 6 individuals to small herds of 20 to loose groups of 100 during the dry season around the receding waterholes. The population numbers are affected seasonally because of their dependency on rainfall, which also coincide with the amount of free water, food, and territory. Typical groups are composed of one dominant male, several adult females and their young. Subordinate males are peripheral members; strange individuals will often be attacked.

- 2.2.1.1 Suggested age and sex structure of social group: In a captive setting, it would be advised to start a “herd” with a founder male and one or more females of nearly the same age and allow them to naturally reproduce to the ideal numbers for the size of the exhibit, facilities, and other resources. Subordinate males (probably sons of the dominant male) and young females should be placed at another facility or exhibit once they reach sexual maturity to prevent interbreeding. The social order is usually very stable and the dominant position is rarely changed.

- 2.2.1.2 Temporary isolation of parturient females and young from males: In the wild they naturally stay together unless there is a shortage of rainfall and competition for water habitat is fierce. Many zoos keep the dominant male with the female during and after pregnancy without difficulty as long as the young are in good health. Young capybaras are precocial at birth and can join the family group on exhibit within a couple days of birth as long as the pool is shallow (\*if necessary drain the pool to only a few inches initially and make sure the young are able to climb out of it easily, even when startled) and the fence mesh is small enough to keep them inside the exhibit. If the den quarters are particularly small and there is concern that the male will injure the young, a chainlink barrier should be built between the male and the female and young if they are kept indoors overnight. If individuals are temporarily removed, it may be hard to reintroduce, even if only overnight.

- 2.2.1.3 Seasonal separation of sexes: During the reproduction season the males become extremely aggressive towards one another as they vie to breed the females as possible, as will subordinate males. The dominant male will successfully breed with many of the females but just as often the subordinates are also successful. Having more than

one breeding male may lead to unwanted aggression as well as difficulty in determining the parentage of the pups. Unless facilities can accurately determine when the females are in estrus, considerations for removing the subordinate males permanently should be considered when deciding how to develop groups of capybaras.

- 2.2.1.4 Nursery groups: Infants tire easily and are therefore vulnerable to predators such as fox, small cats, feral dogs, caiman and jaguar. The females of like ages may band together in the wild particularly in the waters as a defense against predators. The youngsters cluster in tight groups with an adult while the females swim around them to keep predators away. All females will nurse any pups. Even in captivity females will “band together” and watch over the young. Females will also allow other females’ pups to nurse from them.
- 2.2.1.5 Forced emigration of adolescents: During the dry season some youngsters both male and female may be forced to emigrate from the group due to a lack of resources (food and water on the home range). A subordinate male may leave their natal group to join a small group of females and become the dominant male although this is risky when he lacks the home range necessary to maintain a group. In captivity once a particular group size has been attained or if there are difficulties with a family member, ousting of individuals could occur. Management of the capybara group numbers must be reconsidered at each birth of a litter.
- 2.2.1.6 Multigenerational groups: Can have several generations of females and males. Generally there is a dominant male, several females and their young and some of the subordinate males stay on the periphery of the group. Typically the dominant male, the adult females and their young, and youngsters under the age of sexual maturity will coexist well.
- 2.2.1.7 Groups deriving from cohorts: It may be possible to create a group from cohorts of like ages as long as the natural social structure is kept in mind. A dominant male will lead the group with any other males as subordinates and the females as breeders. In the wild the yearlings (both male and female) of a group are dispersed leaving the group comprised of a dominant male, the subordinate males, and equal number of females and their new young. Individuals or groups smaller than four failed to rear any young due to several reasons: lack of essential resources, predation, and decreased reproductive success.
- 2.2.1.8 All male groups: Small bachelor groups may be successful as long as no females are present or nearby. At the Brandywine Zoo they had a father and son living together for several years with little aggression.
- 2.2.1.9 Daily and Life stage variation in patterns of social affiliation: Groups of capybaras typically are multi-age. During the

reproduction season there is a marked increase in aggression among males competing for breeding of the females, even with the subordinate males.

## 2.2.2 Group size:

2.2.2.1 Minimum and optimum group sizes: The minimum group size is two. Optimum group size is dependent on the size of facilities and resources. Groups may occupy areas ranging from 4 to 494 acres in the wild with an average being 24- 49 acres. Zoos the average number of capybaras exhibited are 2 ½ individuals. Out of 23 zoos that responded to this section of the survey, 11 reported same sex groups.

2.2.2.2 There are no individual distances required as long as you have a compatible group.

2.2.3 Conspecific groups: Groups of capybaras are territorial. The home ranges overlap slightly in the wild. Intruders are aggressively chased from the range. Unless the exhibit is quite large (several acres) having conspecific groups is usually not possible in a captive setting.

## 2.2.4 Mixed species groups:

2.2.4.1 Identify appropriate species: Capybaras are ground dwellers so many harmless arboreal species could cohabitate. They can also be mixed with ground dwelling species like rheas, parrots, waterfowl, storks, tapirs, guanacos, screamers, deer, monkeys, and anteaters, as well as reptiles. Care must be taken to prevent the other species of animals from eating or spoiling the capybara diet or preventing them from utilizing the pool or den facilities.

2.2.4.2 Identify key environmental elements for the capybaras: Water is one of the essential elements in the life of capybaras. It is their source of food, space, the site of reproduction, an important function of their thermoregulation, a refuge from predation, and a site for defecation and urination. The pool for the capybaras should be a least deep enough to allow them to submerge. The pool should have a clean water fill in which the animals can drink or filtered and ideally dumped at least once per day due to the enormous amount of feces left in the pool each day. The capybaras should have separate holding facilities and dens from the other animals. In northern climates the animals require heated quarters. The roomier the area the better.

2.2.4.3 Address appropriateness of single-sex groups: We have found that if the animals came from the same family and there was no competition from resources, they cohabitated fine.

2.2.5 Introductions: As in any animal introduction extreme caution is required. All new animals should be introduced to the facility like any other introduction. If possible while the rest of the group is off exhibit the new individuals should have the opportunity to explore the facility and learn the escape routes. The animal should have the opportunity to

smell the other group members and leave their own scent mark. The individual should be returned to their holding facility and the group returned and observe their reaction. It is essential that the new individual be introduced to the resident individual or group via a “howdy cage”. The group and individuals reactions must be closely watched. If there is any aggression while the animal is still in the “howdy cage” extreme thought should be taken as to whether this individual will be successfully incorporated into the group. There have been instances of successful and unsuccessful introductions. One such instance involved an old female who became very territorial and would not allow any males into the exhibit. Eventually she was moved to another exhibit where she immediately paired up with a new male. Capybara may be extremely dangerous, aggressive fighters rearing up at each other, chasing each other, and biting large hunks of flesh from each other. In the wild the literature states that usually foes rarely do any harm to each other, however, in captivity where space is dramatically smaller serious injury can occur.

- 2.2.6 Human-animal interactions: In the wild humans are considered a predator. Where heavily hunted by man, capybaras often become nocturnal. In captivity the animals are normally active early morning and late afternoon. This works well with the zoo environment for morning and evening feedings, activity, and enrichment. Normally the capybaras are relatively laid back and at ease with human interaction in their exhibits. Some capybaras can be easily startled and run from humans while others enjoy the human presence.
  - 2.2.6.1 Train: Training for husbandry purposes have included: crating, weighing, injections and touching for inspection of feet, teeth, and mouth. They may also be target trained. Operant conditioning (positive reinforcement, food rewards) can be used for successful handling and reduced stress of human-animal interactions in addition to (and with) pressboards, squeeze chutes, etc. The use of sweet foods like yams works great.
  - 2.2.6.2 Animal and keeper safety: It has to be remembered these are 100 pound animals with 3 inch long incisors. Although usually docile creatures more interested in breakfast and browse. Capybaras are large and relatively quick, and can seriously injure keeper or veterinary staff. Capybaras can be managed with a light touch and with practice, many learn routine calls and commands. However, extreme caution should always be kept in mind if young are present or a new introduction of animals is taking place. These animals rear on their hind legs attempting to bite at the neck ripping huge avulsions of flesh during fights. Animal keepers must pay close attention to the warning calls given by the animals and be aware of the location of the young in particular. If it is necessary to restrain individuals, it is best to attempt to separate the individuals from the group to prevent counter attacks from group members, particularly if

the young are being removed. Individual capybaras have different degrees of safe distance; it is up to the animal keepers to determine what is comfortable for their animals.

### **3. Health and Nutrition:**

- 3.1 **Diet:** Capybaras are exclusively herbivorous, feeding mainly on grasses that grow in or near water. They are very efficient grazers, and can crop the short, dry grasses left at the end of the tropical dry season. Because a large proportion of the grasses they eat consists of cellulose, which is indigestible by any mammal's digestive enzymes, capybaras possess a huge fermentation chamber or cecum to handle these foods. However since the cecum is located between the small and large intestine, the animal cannot absorb the products of the fermentation carried out by microbial symbionts. To solve this problem, they resort to coprophage – reingestion of feces – in order to be able to take advantage of the work of their symbionts. Thus, for a few hours every morning during the resting period, they recycle what they ate the previous evening and night. Usually they spend the morning resting, then bathe during the hot midday hours; in the late afternoon and early evening they graze. At night they alternate rest periods with feeding bouts. They never sleep for long, instead dozing in short bouts throughout the day.
- 3.1.1 Nutrient requirements for all life stages: Newborns normally weigh about 3.3 lbs. (1500 g.). The babies should be able to eat grasses within one week and are totally weaned by 16 weeks. Adult males weight averages to about 110 lbs. (50 kg.) and the female to 137 lbs. (62 kg.).
- 3.1.2 Sample diets: 1 adult fed daily: (1) 3 C Rodent Chow, 3 apples, 1 ¼ carrot, 1 corn on cob, 1 large bunch kale, ¾ peeled canteloupe, ¾ sweet potato or (2) 1 qt. Mazuri rodent pellets, 1 flake alfalfa, 1 head romaine, 1 ½ apples, 3 carrots and 1 sweet potato.
- 3.1.3 Reproductive and parturient females may require additional caloric intake. Animals may be less active in the winter and more active in the summer resulting in a change of caloric intake. This can be updated in the future as more information becomes available. At this point, zoos have not kept track of weights except when animals have been tranquilized with most adults weighing around 100 lbs. (45.3592 kg.) with the really big ones reaching around 150 lbs. (68.0389 kg.).

### **3.2 Medical management**

- 3.2.1 Quarantine and hospitalization: The standard quarantine period is 30 days. CBC panel, bloodwork and three negative fecals (direct and float) are recommended prior to shipment. A complete physical exam should be performed on each animal at the beginning of the quarantine period and a visual examination at the end of this period. During hospitalization they need to be protected from injury by being held in a quiet area with smooth walls. Abscesses can develop from wounds caused by fighting. Treating abscesses may require that the animal be separated from the group in order to provide proper medical care.

- 3.2.2 No vaccinations are currently recommended for rodents although tetanus and/or killed rabies prophylaxis may be appropriate in some areas. With appropriate dietary components (browse, nuts, etc.) there should be no need for tooth trimming. If exhibit space is large enough they should wear their nails down on their own. Training for visual inspections eliminates the need for use of tranquilization.
- 3.2.3 Due to the size of these animals, they should be separated prior to tranquilization for any invasive medical procedures. Giving injections can be accomplished without tranquilization by dart gun, hand syringe, blow dart, push board/syringe, squeeze crate, pole syringe.
- 3.2.4 Neonates do not receive vaccinations. Geriatric animals need to be monitored for food intake.
  
- 3.2.5 When nearing birth, females generally prefer to be alone, returning to the group shortly after parturition. They do not need to be separated but just given access to holding area so they can find some privacy.

#### 4. **Reproduction:**

- 4.1 Identify seasonal changes in physiology and behavior associated with reproduction and address management implications of such changes: Males have a large scent gland on the top of their muzzle, which may become noticeably larger as they reach sexual maturity. In their normal habitat reproduction may be controlled by the amount of rainfall received in an area; when appropriate levels of rainfall have fallen, the living areas of the capybaras is adequate to raise their families without overcrowding and increased predation. Males become increasingly aggressive when more than one male is present during the reproductive season. A single male will try to breed with as many females as he can. Increased reproductive activity will usually be seen in the spring. Usually there is no needed change in management of the animals. The males increasingly scent mark their territory. The females scent may change as they enter estrus because you will see the males actively pursuing them more often.
  
- 4.2 Address timing of introductions: Introduction should be planned well before or after the usual reproductive season when aggression levels are naturally lowest.
  
- 4.3 Address provision of described facilities for parturition: In northern climates heated facilities are required. The floors should be able to be hosed and drained (capybaras will defecate on the walls and floors). Ideally the floors are also heated. The floor should be covered with a substrate such as hay. The facility should offer natural light or artificial UV light provided on a natural light cycle. Water is most successfully offered through water lixits as well as a heated pool with a large drain if possible. Water in bowls is immediately defecated in and overturned.

- 4.4 Address what, if any, circumstances warrant hand-rearing: Any young which obviously are injured or too weak to survive on their own. A dominant male may potentially kill any young who are too weak, are injured or ill.
- 4.5 Recommend mean and duration of contraception for taxon: In captivity capybaras may breed year round, with peaks occurring spring and fall. Separate immediately upon parturition. For permanent contraception, sterilization of males is recommended. For reversible contraception, MGA implants may be used. There is now a new MGA liquid contraceptive available through the AZA Contraception Center that might be utilized. The Rodent TAG will be looking into this as another means of contraception. **Readers should ALSO contact the Contraception Scientific Advisory Group for periodic updates. Chair, Cheryl Asa, St. Louis Zoo, ph. 314-768-5488, [asa@slu.edu](mailto:asa@slu.edu), fax 314-768-5454.**
5. **Behavior management:**
- 5.1 Training for routine husbandry procedures is recommended for performing visual inspections, shifting, and enduring close proximity to keepers. Hand-reared animals and animals used to be being around humans are more likely to respond to training.
- 5.2 Opportunities should exist for the animals to adjust to crates, scales, etc., before training for non-routine husbandry procedures. It is ideal in a captive environment to arrange the enclosure in a manner that encourages them to shift through squeeze cages on a daily basis. Crates can be placed at the end of the squeeze when capturing to reduce stress and avoid injury.
- 5.3 Introductions of capybaras must be done very slowly using a “howdy cage”. They should have scent, visual and audio introductions before thinking of putting them together. It is often very hard to introduce new animals (especially males) to an existing group and new groups are easiest to assemble if young individuals of about the same age are used.
- 5.4 A facility designed to shift animals from one area to another is ideal. This helps with husbandry practices and reduces stress on the animal by being able to maintain a safe distance from humans. The use of food is the least stressful manner of training capybaras to shift and move. Split their diet into two feedings and have them come inside at least with one of them routinely. Capybaras are also easily herded but staff should move slowly and not crowd them.
- 5.5 Information pertaining to training techniques is vague. Many zoos have used whistles, ringing bell or clicker for target training and conditioning. Training to humans (keepers) proximity just takes time, patience and trust.
- 5.6 Animal care staff with experience maintaining large rodents in captivity should have the necessary experience to successfully care for capybaras. They must

know how to use push boards, and be aware of their flighty behavior as well as the protective behavior the group has for other members of their herd.

- 5.7 Enrichment can be offered in the many forms such as the following: Scents, browse, bread, produce in palm fronds, scattered pieces of food in hay, hard plastic floating toys, artificial logs, bowling balls, bowling pins, cardboard tubes, sand/pea gravel box, fruit cicles, burlap bags, mud wallows, misters and mixed species exhibits.

## 6. Documentation:

I wish to thank the people that helped by reviewing this husbandry manual:  
Alan Shoemaker and Deborah McWilliams

Crandall, L. S., Management of Wild Mammals in Captivity. Chicago & London: University of Chicago Press, 1964.

Eisenberg, J. F., Mammals of the Neotropics, the Central Neotropics Volume 3. Chicago & London: University of Chicago Press, 1999.

Eisenberg, J. F., Mammals of the Neotropics, the Northern Neotropics, Volume 1. Chicago & London: University of Chicago Press, 1989.

Emmons, L. H., et al. Neotropical Rainforest Mammals, A Field Guide, Chicago & London: University of London press, 1990.

Grzimek, H. C., Grzimek's Animal Life Encyclopedia Volume II, Mammals II. NY, NY: Van Nostrand Company, 1975.

Herrera, E. and D. W. MacDonald (1989). "Resource Utilization and territoriality in Group-Living Capybaras." (Journal of Animal Ecology (a989), 58, 667-679.

Nowak, R. M., Walker's Mammals of the World, 4<sup>th</sup> ed. Vol. 2. Baltimore: John's Hopkins University Press, 1983.

Nowak, R. M., Walker's Mammals of the World, 6<sup>th</sup> ed. Vol. 2. Baltimore & London, John's Hopkins University Press, 1999.

MacDonald, D. W., K. Krantz, et al. (1984) "Behavioral anatomical and chemical aspects of scent marking amongst Capybaras (Hydrochoerus hydrochaeris) (Rodentia: Caviomorpha)" Journal of Zoology (1984) 202, 341-360.

MacDonald, David, The Encyclopedia of Mammals, Andromedia Oxford, Oxfordshire, United Kingdom. 2001

Brennan, L. S., “Working Draft: Husbandry Standards for Capybaras.” Brandywine Zoo, Wilmington, DE.

Smurl, Michelle. (As a Guide) “Husbandry Standards for Keeping Cavies in Captivity.” Brevard Zoo, Melbourne, FL.

Meek, Caroline. “Minimum Husbandry Guidelines for Mammals: Capybaras.” AZA, Riverside Zoo, Scottsbluff, NE.

## Appendix A

Minimum Standards Survey - 2003 Results

Appendix A  
Minimum Standards Survey – 2003 Results

CAPYBARA - HYDROCHAERIS HYDROCHAERIS

I sent out a survey and received 23 responses.

**Temperature:**

**Do you have temperature guidelines for summer?**

All responded No	23
Corrugated plastic pipe 24", barns, & trees	6
Pools also provided	8
Inside year round	1
Mud wallows	2
Shade Provided	1

Note: Although only one person listed shade provided, if you look further down at the "Outside Areas: Exhibit size, substrate, hides & pools" - you will see that all but three listed hide areas that would provide shade.

**Do you have temperature guidelines for winter?**

Inside year round	1
Below 40 F – given access w/ straw	3
Access to barn – no temp given	6
If in teens hook up heat lamp & bedding	1
Not outside below 50 F	1
Not outside below 55 F	1
Not outside below 60 F	1
Access to barn above 20 F/lock in below 20 F	2
No	2
Not outside below 25 F	2
Not outside below 40 F	2
Not outside below 32 F	1

**Diet: One animal**

**Fed 2 x Daily:**

Pelleted Diet High Fiber, apple, banana, carrot, corn, greens & hay	1
Mazuri Omnivore biscuits, corn, apple, banana, watermelon, kale or romaine, yams & orange	1
Lab Chow 2C, Guinea Pig Chow 3C, ½ head greens, 1 ¾ # Fruit & veggies, ¾ head kale, browse 4 x weekly, alfalfa/hay 3 x weekly	1
1 ½ C Rodent Chow, 1 ½ apple, 1 ½ carrot, 1 ½ head	1

lettuce, 2/3 sweet potato, free choice timothy hay/alfalfa mix	
Hay a.m./produce p.m./Primate browse biscuits a.m. & p.m.; orange, romaine, fresh browse, apple, carrot, banana, yam, broccoli, spinach, kale, corn, peanuts raw, orchard grass	1
Monkey Biscuits, lab blocks, sweet potatoes, corn, leafy greens, oats	1
A.M. 4 Cups Rodent blocks, P.M. 2 Cups Rodent block & 140 g. Produce (fruit & vegetables)	
0.5 C. Rodent Chow, 0.5 C Guinea Pig, 1.5 Apples, 0.25 Head Lettuce, 1.5 Carrot, 0.33 Potato. On Tue & Thur 1.5 Orange.	

**Fed once a day**

Lab blocks, carrots, sweet potatoes, & apples	2
3C Rodent Chow, 3 apples, 1/1/4 carrot, 1 corn, 1 lg. bunch kale, 3/4 peeled canteloupe, 3/4 sweet potato	1
Rabbit Chow, carrots, sweet potato, leaf lettuce, kale	1
Mazuri Primate Biscuits, apple, carrots, pears, romaine, banana, sweet potatoes	1
ADF16, Monkey biscuits, apples, carrots, yams, Grass hay & browse when available	1
1 Qt. Mazuri Rodent Pellets, 1 flake alfalfa, 1 head romaine, 1 1/2 apples, 3 carrots,	1
3/4 lb. Lab Monkey biscuits, 4 qt. fruit & veggies, 4 qt. greens, browse 10 – 15 cattails, bamboo, mulberry or 1/4 flake grass hay	1
Free choice alfalfa, 3 qts. D&H and 17% Herbivore pellets, bananas, & greens	1
Kale, yams, leaf eater biscuits	1
Small chunk dog food, alfalfa cubes, monkey biscuits, produce, (they don't like oranges or the alfalfa cubes)	1
Three did not list diet	

**What type of food bowls are used?**

Concrete	1
Rubber Tub	2
Metal	8
Galvanized Metal	4
Stainless Steel	4
Plastic	2
Floor	3
Aluminum	1

### **What type of water devices are used?**

Concrete	1
Nelson Waterers	6
Moat	1
Large trough	2
Galvanized metal	1
Bowl in waterfall	1
Auto w/ covered float	2
Rubber	4
Lixit	4
Pools	9
Stainless Steel bucket	1

### **Is there any difference between summer & winter feeding?**

More hay in winter	9
Just add bedding	2
Cane in Summer	1
None – just change time of feeding	1
None -	10

### **What types of enrichment are used?**

Scent	1
Lake	1
Browse	11
Bread	1
Produce in palm fronds	1
Scattered food	2
Hard Plastic floating toys	1
Artificial logs	1
Bowling balls & pins	1
Cardboard tubes	2
Logs	1
Kegs for floating	1
Novel food items	9
Sand & pea gravel box	1
Fruit cicles	1
Exhibit mates	5
Keepers interaction	5
Burlap bags	1
Hidden food	2
Swimming	11
Mud wallows	3
Misters	1
Boomer Balls	1

### Outside Area: Exhibit size, substrate, hides, pools

1. 96'x60'  
dirt & mulch  
house for winter  
canal runs thru exhibit
2. ¼ acre approximately  
grass  
black corrugated plastic pipe ("24 dia.)  
large natural bottom moat (3" to 8')
3. ¼ acre  
grass  
shrubs, tree  
pool (10'x10'x3'deep)
4. 40' x 20'  
pea gravel  
Open-fronted shelter (7'x7'x5')  
Pools (5'x8'x1.5'deep)
5. 20'x60'  
dirt/grass  
access to indoors- rarely use  
pool (10'x40'x1'to4'deep)
6. 8000 sq. ft.  
sand/dirt/grass  
trees, shrubs, boardwalk  
natural pond 5000 sq. ft. (6'to 7' deep)
7. 40'x80'  
grass/top soil  
pool (20'x10'x4'deep)
8. 120'x140'  
dirt/grass  
hills & protected planted areas  
oval pool (12'x6'x6'deep) needs more surface & less depth
9. 60'x70'~  
dirt/grass  
shrubs/tall grasses  
Concrete pool (15'x7'x5.5'deep)
10. 47'x63'  
soil/sand/grass  
fallen logs  
pool (21'dia. w/3'sloped sides)
11. 53'x22.5'  
mulch  
none  
pool (10'x15'x2.5'@deepest (tapered)
12. 56'x15'  
grass

- fake log/open-sided cave
- pool (40'x12'x12'deep)
- 13. 100'x50'~, irregular shap, basically half circle
  - soilw/grass/shrubs/trees
  - shrubs/water/trees/logs
  - moat (15' across x 6'deep) 80,000 gal. Capacity
- 14. 30'x150'~
  - sand/mulch
  - 3creep areas for feeding away from tapirs
  - 2 pools (15'dia. 2to3'deep & 6'x10'x0to3'ramped)
- 15. 1/3 acre
  - grass
  - covered stalls/cane
  - pool (20'dia.x3.5'deep)
- 16. ~1.5 acres
  - dirt/grass
  - heavily planted/trees/shrubs
  - natural lagoon (few inches to 10' deep)
- 17. 1076 sq. ft.
  - grass/dirt
  - trees/rocks
  - pool (263 sq.ft. Irregular shape)
- 18. ~2 acres
  - dirt/grass
  - brush pile/trees/barn/
  - 2 lakes (ea.~1/3 acre x depth 2" to 15' & 1"to 20')
- 19. 535 sq. ft.
  - dirt/native plants
  - none
  - 16'diam. X 12" deep
- 20. 33' x 72'
  - dirt
  - none
  - 1959 sq. ft. / 3-4 '
- 21. N/A - 2

**Indoor Area: Exh/holding, substrate, hides, pools, bedding(what)**

1. holding 39'x20'/stall13'x12'8"
  - holding dirt/stalls concrete floor
  - corrugated tube & air kennels
  - no pools
  - none listed
2. 1) 25'x15' 2) 20'x40'
  - soil
  - cave

- pools 1) 12'x5' 2) 12'x10' (both 3' deep)  
straw, wood shavings
3. 10'x14'  
concrete  
none  
pool 4'x10'x8" deep  
straw in 2'x4' galvanized stock tank
  4. 25'x25'  
concrete w/rubber horse stall mats  
none  
pool 4'x2' deep  
wood shavings-aspen
  5. 20'x8'  
concrete  
none  
none  
no
  6. 20'x20'  
concrete  
none but area can be closed off  
pool 6'x6'x2.5' deep  
hay
  7. not given  
concrete floor w/rubber mats  
none  
pool 5'x5'x2.5' deep  
no
  8. 15'x7'  
concrete  
none  
none  
Hay
  9. Exh. 1200 sq.ft./holding 144 sq.ft. –4 holding areas 6'x6'  
Sand but can change  
Safety area for them – no true hide, always visible  
Pool 400sq ft x 0 to 4.5' irregular shaped  
Only if there are young present/injured animals (hay, burlap, rubber mats)
  10. 15'x 7'  
cement, heated floor (65-70 F)  
none  
none  
hay (fresh timothy daily)
  11. 12'x10'  
padded flooring over concrete  
none

- pool 3'x2'x3' deep  
hay and shavings
12. 12'x10'+other stalls in bldg & an outdoor/off exhibit holding 3x that size  
concrete  
none  
pool 4'x10'x5' deep  
no (but they do lay on their feed hay)
13. 15'x15'  
rubber mats  
none  
none  
Bermuda hay
14. Exh. 20'x18' / Hold 28'x6'  
Cement  
None  
pool 13'x9'x4' deep  
grass hay
15. barn 10'x6' / holding 40'x20'  
dirt/grass  
barn  
none  
straw – winter only
16. 6'x8'  
concrete  
none  
none  
no
17. 20' x 20' divided into 5 stalls  
concrete  
none  
none  
timothy hay
18. 13'x20' w/2 13'x7' stalls  
concrete covered  
none  
none  
pine shavings
19. 16'10" x 10'  
dirt  
none  
none  
no
20. N/A        4

### **Social Groupings**

1. 4.0 kept together in mixed exhibit w/ 1.1 European Stork & lots of fish

2. 0.1 in mixed exhibit w/ 1.1 Baird's Tapir, 1.0 Giant Anteater, 0.2 Guanaco, & 0.2 Rhea
3. 0.2 in group 1/ 1.0 not allowed to breed in mixed species exhibits w/ cape teal, w. hartlaub's duck, & rheas
4. 0.2 kept together in mixed species exhibit w/ 3 green iguanas
5. 1.1 kept together in own exhibit (have been housed in past with zebu, shelducks, & geese)
6. 1.0 (will be getting 0.2 when weather permits shipping) in mixed species exhibit
7. 0.2 house in mixed species exhibit w/ 0.1 tapir and 1.1 screamers
8. 0.3 house in mixed species of rheas & macaw (historically difficult adding new animals or babies removed even for short time, the dominant male that we used to have was only one they didn't have introducing. They kept male with females even when babies came – he was a great dad; masterplan calls for them to be exhibited with tapirs, & giant anteaters.)
9. 0.1 (originally 1.2) which is housed in mixed species exhibit with 1.0 guanaco, 1.0 brocket deer, 1.3 rheas, occasionally baird's tapir.
10. 0.3 housed and exhibit alone
11. 1.1 group; and 2.2 group – they do breed and have not had a problem finding homes for the young. They are in mixed species exhibit with 1.1 anteater, 3 spoonbills (yes they do interact) and in the past have had 1.1 tapirs.
12. 1.1 together in mixed species exhibit with 1 cara cara (non flighted) & 1 red-eared slider turtle
13. 0.2 together except during feeding exhibit alone.
14. 0.2 (previously a breeding pair & offspring) housed together with mixed species of 0.2 So. Crested Screamers, 1.1 Black-necked swans, 1.1 black howler monkey, multiple "fly in" mallard ducks. They found home for male when MGA implant failed twice.
15. 1.2 (male neutered) exhibited together in mixed species with 1.1 Baird's tapirs)
16. 1.1 housed together in mixed species exhibit w/ 1.1 Screamers, 0.1 Muscovy duck, rhea, 0.1 guanaco, 1.1 Patagonian cavy, 1.1 yellow footed tortoise
17. 1.1 housed together in own exhibit.
18. 3.5 housed together (they are having some fighting within the group which may force them to separate into two groups) with these mixed species. 1.2 lowland tapirs, 0.5 guanaco, 1.0 collard peccary, 2.3 rhea, 1.1 crested screamer, and a large number of waterfowl.
19. 0.2 housed together in mixed species exhibit with 1.1 crested screamers.
20. Historically – we do not have any at this time. 1.4 housed together in summer in T.A. yard w/ lakes in mixed species exhibit that contained 1.1 guanaco, 1.1 black-necked swans, 1.1 coscoroba swans, 1.1 costa rican deer, & many waterfowl. (This is where breeding took place, then they had their babies when we moved them inside for the winter – they were separated but still next to each other through chain link.)
21. Have had mixed pair for breeding in the past. Now have same sex pair of females only. No multiple groups. Mixed pair were housed together continuously. The last breeding pair turned out to be females & the

breeding behavior seen was really dominance behavior. Eventually separated due to injuries until new homes could be found. Housed with Black-necked swans.

22. Single Group only, 1.1 (male castrated) – Mixed species 1.1 Baird's Tapir.

23. No information given

### Medical Management:

1. Vaccinations – None 20

Rabies 7

Tetnus 1

2. Hereditary Diseases - None

3. Tranquilization –

Jacksonville Zoo, Jacksonville, FL., Dr. Nick Kapustin, Ketamine, Medetomidine (antagonist: Atipamezole), Isoflurane, 904-757-4463 x 220

Zoo New England, Boston, MA, Ketamine/Xylazine/Yohimbine – approx. 6mg/kg & 0.25mg/kg and .11mg/kg respectively – good anesthesia  
Telazol – 1mg/kg – good anesthesia

Henry Vilas Zoo, Madison, WI , Ketamine IM – worked well

Palm Beach Zoo at Dreher Park, West Palm Beach, FL., Isoflurane for  
Various reasons

Reid Park Zoo, Tucson, AZ, Ketamine 5 ml – worked well

The Salisbury Zoo, Salisbury, MD, 0.5 Rompun & 0.3 Rompun for  
knockdowns, 3 – 4 Ketamine for sustained anesthesia in surgery

Bergen County Zoo, Paramus, NJ, Ketamine various amounts – poor  
muscle relaxation & induction – no longer use. Telazol – 250mg –  
Excellent induction & relaxation – prolonged recovery, colitis  
Few days following anesthesia.

Glen Oak Zoo, Peoria, IL., Telazol 1 ml. Mild sedation.

Cleveland Metropark Zoo, Cleveland, OH, Telazol 4-5mg per kilo &  
Gas Isoflurane

Brandywine Zoo, Wilmington, DE, Ylozine 25mg, ketamine 150mg,  
glycopyrolate 0.27mg IM (**HAVE TO WATCH FOR  
RENARC**)

San Diego Zoo, San Diego, CA., Isoflurane by mask. Butorphanol 0.3  
mg/kg with medetomidine 0.03 mg/kg and reversal with 0.5 mg/kg  
natrexone and 1.5 mg/kg atipamezole both given IM only. Also,  
ketamine 300 mg plus midazolam 12.5mg & butorphanol 5 mg IM  
as a combination for a 42.95 kg capybara male that worked well for  
multiple procedures. This regime was supplemented with oxygen.  
This has worked well for a very small group of capybara. Note:  
pacarana & mountain paca do not seem to do well on this regime  
(apnea). We would use isoflurane via mask as a default for  
smaller/handleable individuals.

Disney's Animal Kingdom, Lake Buena Vista, FL., Ketamine with  
detomidine & butorphanol. (Isoflurane is used if the animal gets

light). Works well.  
 Santa Ana Zoo, Santa Ana, CA., Ketamine/Xylazine mix that worked well. 160 lb female was given 600 mg Ketamine and 90 mg Xylazine.

El Paso Zoo, El Paso, TX., 1.0 rec'd 250 mg of Telazol for castration. 0.1 Rec'd 150 mg of Ketamine for physical exam. No problems with Either tranquilizer.

Audubon Zoo, New Orleans, LA., [bhammond@auduboninstitute.org](mailto:bhammond@auduboninstitute.org) is contact.

Memphis Zoo, Memphis, TN., Medetomidine @ 0.06 mg/kg plus ketamine @ 2 mg/kg (estimated weight provided heavy sedation at ~ 20 minutes.

Roger Williams Park Zoo , Providence, R.I., Telazol – poor muscle relaxation, long recovery.

Sedgwick County Zoo, Wichita, KS., Contact Vet. Dept.

4. Injection methods

Dan-ject dart system	1
Dart gun	5
Teleinject blow dart	2
Hand syringe	6
Blow dart	6
Push board/syringe	2
Train to crate	2
Pole syringe	2
Net/syringe	1
Pole syringe in crate	1

**Reproduction**

Hand-rearing	None
Hereditary	None
Birth Problems	Yes

Glen Oak, Peoria, IL.

Audubon Zoo, New Orleans La. None, as long as you do not breed prior to 2 years of age. Doing so could cause pelvic fusion.

**Behavioral Training**

Target training	1
Tolerate 5' proximity	1
Shifting	10
Responds Ringing bell	1
Tolerate 3' proximity	1
Easily herded	2
Crate trained	5

Tolerate close proximity	8
Visual inspection	8
Weighing	4
Tolerate 1 to 2' proximity	1
Touchable/not handleable	3
Hand feeding	2
Teeth check	2
Feet check	1
Open lips	1
Rub back & belly	1
Injections	1