

Suggested Guidelines for Primate Enrichment

The primate taxon includes a wide variety of species with an incredible range of abilities. From lemurs to chimpanzees, devising an enrichment program can seem a little daunting at first. The prosimians' range of abilities can differ considerably from that of apes and yet it is relatively easy to find linking attributes between genetically distant primate species. One obvious commonality is their need for psychological and behavioral enrichment. Most primates are curious, complex animals with the ability to manipulate objects in their environment. When that environment has been limited by the confines of an exhibit or nighthouse space, the intelligent primate requires some type of external stimulation. Without constructive activities, primate behavior can become aberrant and repetitive and some individuals may indulge in self-mutilation or become aggressive towards cagemates. Exhibiting animals that are engaging in unhealthy behavior, such as rocking or feces consumption, does not fulfill the educational niche that zoos are hoping to occupy. The public feels sorry for the animals, has learned little about the unique characteristics of the species, and the animal has possibly led a sub-standard quality of life. Enrichment can play a significant role in creating the quality of life that keepers and animal managers are seeking to provide for the animals in their care.

A well-developed enrichment program is a necessity for any captive primate. The United States Department of Agriculture (USDA) mandates that all primates in captivity receive enrichment to ensure psychological well being. But enrichment can also be one of the most challenging and enjoyable aspects of the keepers' daily routine. Monkeys and apes are clever and quick. They are dexterous, often agile and engage in numerous play behaviors. Their natural curiosity can lend itself to unending possibilities for activities which can be a challenge for keepers trying to create new devices or games for animals that have nothing but time and intelligence on their hands. Creating a satisfying, complex environment for captive animals can help reduce or eliminate stereotypic or other undesirable behavior, thereby improving the lives of the individual animals.

Numerous primate species are highly endangered in their wild habitats, and someday, reintroducing captive specimens may become a reality. Therefore, ensuring the survival of necessary natural behaviors in these animals will be essential. Successful parenting, foraging, appropriate group behavior and mental agility are important skills for animals to retain if they are to survive without the comforts of the zoo. If these behaviors are slowly culled over generations through a captive lifestyle, the likelihood of reintroduction programs to succeed is reduced.

Exhibit Enrichment

If the opportunity presents itself to design an exhibit with enrichment in mind, it is important to examine the natural history of the species to be housed. Several questions can be posed when designing exhibit enrichment, such as: Does this species brachiate or is it more of a ground dweller? Is it shy by nature? How does it acquire its food? What is its natural tendency for destructive behavior? Knowing the distinct characteristics and behavioral inclinations of the species can aid in the design of exhibit enrichment.

Permanent features should be sturdy and weatherproof. Exhibit enrichment items should be able to withstand the rigors of disinfection and regular use of the animals. If the enrichment devices break they should be repairable or easily removed. Permanent features should comply with zoo policies on aesthetics (i.e., naturalistic vs. non-naturalistic enrichment on exhibit). Because primates can quickly lose interest in items, permanent cage features should have the capacity for modification to increase design options. Off-exhibit holding space should also be considered. Animals may spend as much, if not more time in night quarters than in exhibit space. Therefore, functionality, durability and keeper-ease may take precedent over aesthetics.

Access to exhibits is an important element regarding exhibit enrichment. When possible, keeper access should be devised to allow keepers to offer enrichment without having to occupy the same space as the animals or requiring the animals to shift. This set-up will be conducive to random enrichment offerings and if enrichment setup is simple, it is more likely to be conducted by the keepers. Exhibit access should also allow the use of large machinery to facilitate removal of live trees that have been destroyed, props that have worn out or substrates need to be refreshed. This will likely be more cost efficient if built into the exhibit design. This type of access can make many enrichment projects easier to implement.

Training apparatus and restraint chutes are helpful items for management and medical procedures, and provide training options. Having such devices inside night quarters or off exhibit holding can provide animals with daily enrichment of operant conditioning or desensitization sessions.

Dietary Enrichment

Dietary enrichment is generally one of the more popular forms of enrichment. New items should be approved by the necessary curators, veterinarians or other zoo management. Obesity, tooth decay, diarrhea and allergies are a few of the concerns associated with the provision of some food items. Appropriate choices and moderate amounts should be the rule when novel foods are introduced. New foods may be rejected initially, while some have an acquired taste. Repeated offerings may be the key to getting an animal to try unfamiliar foods. Offering the new item in conjunction with a favorite item could be helpful. In addition, desensitizing the animals to a variety of sweet and savory flavors can help the keeper with medicating animals in the future.

Dietary enrichment does not necessarily require that food outside of the regular diet is offered. A variety of seasonal fruits and vegetables can provide a wide range of flavors, textures and vitamin sources. Donated produce usually fosters this type of selection and daily portions can be determined by a generic fruit/vegetable ratio (i.e., 2 fruits, 4 vegetables and 1 bunch of greens). If the institution's policy dictates that diets must be specifically adhered to, (i.e., 1 carrot, ¼ apple, ½ head romaine, etc.) it may be advisable to vary the diet so that the one version is offered 3 times a week, a different selection four days per week, etc. Offering the produce in its "whole" form may in itself increase feeding time for the animals that can manipulate large pieces.

When searching for dietary enrichment options, referring to the natural history of the species can provide direction. Leaf eating monkeys may appreciate browse more than a pygmy marmoset, for example, but perhaps the most palatable and frequently offered would be offered to a langur. And perhaps the dietary preference of the marmoset would encourage staff to build a worm-log dispenser that a colobus monkey would take little interest in.

Novel Enrichment/Social Enrichment

Creating ideas for novel devices can be a challenging endeavor. Observation can be essential in finding inspiration. Knowledge of the species' traits and inclinations, as well as idiosyncrasies of the individual, can provide insight as to what an animal might find interesting. For instance, is it a scent marking species? Does it have opposable thumbs? Does it use tools? Looking toward the behavioral studies on similar species, both in captivity and in the wild, can spark ideas.

Because many keepers specialize in certain types of animals, it can be helpful to consult with keepers in other areas of expertise. Some devices designed for carnivores or birds could be modified for use with primates. Observing animals with their enrichment devices can provide excellent opportunities to devise new enrichment ideas. Animals often use a device for a completely different purpose than the keepers' intent. A few simple changes to an existing device can produce an entirely new activity.

Primates are generally highly social beings. Group interaction is essential to their psychological well being. Grooming, intraspecific communication, squabbling and parenting are just a few of the activities that occur in a natural grouping. Appropriate troop dynamics can help relieve boredom, alienation, depression and self-destructive behavior in these intelligent creatures.

Individual animals that have not been raised in a natural social grouping may not benefit from intraspecific interaction as the animals may be unfamiliar with the etiquette of the species. Interaction with the keepers may make for a happier, less lonely existence for these animals. Initiating an operant conditioning program can offer not only occupational enrichment, but prove valuable for both husbandry and veterinary management. The individual facility's protocol on animal handling will likely dictate the appropriate amount of interaction for each animal.

Safety Considerations

When initiating any enrichment activity, the importance of complying with the protocols and regulations of the facility and supervisory staff can not be understated. Before new devices are installed in an exhibit area, it is essential to ascertain the safety issues involved. Although every scenario cannot be predicted, many dangerous dramas can be avoided with careful planning. For example, is entanglement or strangulation a concern? Will a substrate be harmful if ingested? Can a less-dominant animal be cornered or injured in an area? Are physical and visual barriers available for subordinate animals? Are objects sturdy enough to resist dangerous fragmentation?

Familiarity with the species and knowledge of the individual animals' personalities will help the keeper predict the animals' initial reactions to a device or situation. It might be helpful for new keepers to start with simple objects and gauge animal reactions. Observing and working with an animal in a training program can provide insight on the individual animal's behavior. Observation and evaluation should accompany new devices. It is also important to consider the possibility of an animal reacting adversely to an enrichment item. Is there keeper access to the exhibit to remove the offending device? Is there a threat to cagemates due to the excitement over the new item? Many primates are formidable animals with large teeth. Staff may choose to devise a contingency plan of how to deal with such an animal when it is in a panicked state.

Many primate species are leaf eaters or enjoy some type of natural browsing material. Local botanists, zoo horticulturists, regional field guides or other institutions' browse lists can help keepers determine which local plant varieties are edible. Determining whether any toxins or pesticides have been applied to the plants is equally important before they are fed to the animals. Examining plant matter for waste contamination from wild animals can help eliminate the risk of disease in zoo animals that will consume the browse. Properly disinfecting branches or logs intended for cage furniture can also reduce the risk of cross contamination.

The following are examples of enrichment that may be appropriate for primates as well as an overview of safety issues that should be considered in the implementation of enrichment.

Exhibit Enrichment

- Climbing structures: trees, telephone poles, cargo nets, artificial vines, rope, etc.
- Weather considerations: rain cover, shade structures, sunny spots, wind breaks, etc.
- Substrate variety: grass or ground cover for reclining on, sand boxes for digging, soil, compost dirt, mulch piles, silage, piles of hay and straw (good for inside nighthouses).
- Bramble piles, log piles to rearrange, to hide forage foods, for breaking up exhibit space and offering protection for subordinates.
- Variety of feeding sites or feeding options.
- Water features: pools, waterfalls, moats, sprinklers, showers, misters.
- Mechanical devices: random mechanical dispensers can be installed in artificial exhibit features to disguise their unnatural appearance.
- Items that can be hung at varying heights.
- Unobtrusive training area for mid-day sessions or vet examinations.
- Truck access for large exhibit renovations or furniture replacement.
- Safe access for the keeper to offer mid-day feedings.
- Mixed species for social stimulation (i.e., some primate species are exhibited with small ungulates, or small primate species (tamarins) with birds, reptiles, etc.)

Dietary Enrichment

- Browse for eating and exhibit complexity.

- Variety of feeding times.
- Variety in offered produce, or several different “set” diets.
- Edible local plant material.
- Desensitization to various types of food vehicles for future medication delivery: juice from water bottles, sandwiches.
- Condiment pastes to hide bitter tastes: BBQ sauce, mustard, salad dressing, etc.
- Seeds, nuts.
- Cereal, crackers, popcorn (can be found in low-salt, low-fat forms).
- Treat foods: jelly honey, cookies, etc.
- Popsicles.
- Insects.
- Increased number of feedings as opposed to increase in food amounts.

Novel Enrichment/Social Enrichment

- Recycled items: cardboard boxes, shredded paper, cardboard tubes, plastic jugs, either alone or stuffed with forage foods.
- Old linens: sheets, towels, pillows, etc. (can be woven into hammocks and tied into caging, filled with pine needles, forage foods, etc. and tied at the ends or used for nest building.)
- Various sized plastic barrels, either free or affixed to walls, for: nests, tunnels, forts, filled with boxes, blankets, substrates and treats and used for “display behavior”.
- Browse: loose, hanging, for eating, exhibit complexity, perching, olfactory, as tools.
- Baby toys for simple, occupational activities.
- Tactile enrichment: variety of textures such as doormats, fiber matting, scrub brush heads, velvet or satin, egg carton foam, etc.
- Olfactory enrichment: aromatic flowers, spices, perfumes, lotions, perfume ads, other animal odors, etc.
- Visual enrichment: colorful items, mirrors, television, different colored balls with different types of treats.
- Auditory enrichment: music, nature sounds, recorded vocalizations of other species.
- Social activities: species appropriate social groups, training programs to build rapport with keepers, improve husbandry, reduce stress and increase veterinary capabilities.

Safety Considerations

- Animals can become entangled in ropes, vines and hanging apparatus.
- Animals may fall while trying to obtain enrichment placed high in the exhibit.
- Animals can drown in water features.
- Dietary enrichment can lead to tooth decay, obesity, allergies, diarrhea, etc.
- Some items may contain material that can be toxic or hazardous if ingested.
- Objects, if broken, can produce sharp fragments that can cut animals.
- Social concerns of subordinates being “trapped” in inescapable places, negative interactions between animals.
- Animals might become stressed as a result of enrichment offered.
- Some plants or parts of plants can be toxic to some animals.
- Enrichment should be designed so animals cannot get extremities caught in devices.
- Keepers should have a safe manner of interacting with the animals during contact or training sessions.

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