One of the major goals of the husbandry programs at Parken Zoo is to give our animals opportunity to perform the full range of their natural behaviors. The last few years, focus has been on hunting behaviors, because this is such a challenge when the law does not allow feeding with live prey. Zoo staff needs to be very creative and innovative when finding ways to give the animals a hunting experience at feeding time. The animals face hunting challenges in the wild and we consider it our job to also give them this type of challenge in the zoo. As a spin-off effect, visitors are given the chance to see the animals in action.

**Cheetah**
In the cheetah enclosure, there is a cable running through several pulleys creating a motor-driven lure system similar to that used for greyhound racing. The pulleys are nailed to the ground and can be moved to create a new track. The speed and direction can be changed to give more variation to every new hunting situation. The cheetahs were not interested every time this system was used, but they often used it and showed speed and fantastic agility.

**Pallas’ cat**
The Pallas’ cats in Parken Zoo are given the chance to hunt a dead mouse or chick attached with a clothes peg to the string of a fishing rod. The keeper actively “plays” with the cats from outside of the enclosure, giving them a simulated hunt situation that can easily be varied each time. The Pallas’ cats have become very active and alert from these hunts and have also been seen to catch...
live birds that fly into the enclosure.

**Amur leopard**
The Amur leopard is a very good climber and is encouraged to climb up the high trees in the Parken Zoo enclosure during a simulated hunting situation. A rope with a large piece of meat is moved across the enclosure and several meters up a tree, pulled by staff from outside the enclosure. As time progressed, the leopard became more fit, agile, and stronger, and the rope had to be pulled by two keepers instead of only one. The Amur leopard often pulls the meat down to the ground and then climbs up in another tree to eat the “prey.”

**Sand cat**
In the sand cat enclosure, there is a cable running overhead on which a string with a dead mouse or chick can be attached. The speed of the cable can be varied by using a motor from a radio-controlled car to run the cable so that the “hunt” can be varied from time to time. The sand cats are more active and curious than before and also more visible for the visitors.

**Fishing cat**
Our fishing cats are fed dead fish in their water pools, and fish are also attached to a string running in the water to simulate a natural swimming fish. The string can be pulled from outside of the enclosure to vary the speed and direction of the “prey.” The fishing cats jump in the water and dive to reach the fish, and show explorative and alert behavior.

The methods shown as examples here have been successful for both animals and visitors. No negative effects have been noticed. The animals can always choose whether or not to participate. These activities have been performed according to a schedule that is varied over time so the animals do not get used to it. Visitors have reacted very positively to the fact that they are able to see animals more active and expressing a range of hunting behaviors, such as stalking, crouching, chasing, leaping, reaching, grabbing, pulling, and jumping. Further research is in progress studying visitor responses as well as the effects on the animals’ behavior. 

![Fishing cat diving for fish.](image)

![Amur leopard leaping for fish.](image)
A Honey Pot for Gorillas

By Emily Clarke, Gorilla Keeper, Howletts Wild Animal Park, Kent, United Kingdom

Howletts Wild Animal Park in Kent, U.K. is currently home to 5 groups of western lowland gorillas (Gorilla gorilla gorilla) made up of 48 individuals. The gorilla keepers are constantly trying to think up new ideas and ways we can enrich the lives of the gorillas in our care. The Honey Pot is one of our most successful enrichment designs.

It has been observed both in the wild and in captivity that gorillas are very good tool users. The Honey Pot requires tool use by the gorillas, encouraging them to use their cognitive abilities and their coordination skills.

The Honey Pot itself is a circular steel structure with multiple tubular openings (fig 1). The device is a permanent fixture that is incorporated into the cage design. However, it has a removable tray where the food source is placed (fig 2), allowing the keepers to randomize the frequency of its use. Having the ability to decide when to implement the device is important to keep this idea novel and maintain the gorillas’ interest.

The metal trays are approx 11x 9 inches in size and can be easily cleaned. We place a variety of food types in the trays: honey, peanut butter, jam, lemon curd, mushy peas, blended chick peas, canned tomatoes, and other food items of a similar consistency. Once the trays are prepared with the chosen food type, two keepers work together. One keeper goes around the outside of the cages placing the trays into the honey pots (about 3 honey pots per cage). The second keeper goes onto the roof and scatters food around the enclosure at the same time. We have found that this method of implementing the honey pots works well—it provides the gorillas with the opportunity to forage for food and use the device, preventing individuals from dominating the food.

The gorillas receive more than 10 different types of browse. During the summer months, browse is plentiful and is given on a daily basis; in winter, the amount given is reduced and offered three times per week. The leaves are consumed, the bark is stripped, and then the remaining sticks are often fashioned into suitable sized tools. By expressing natural tool using behaviors, the gorillas are able to use their coordination and their cognitive abilities to retrieve the food source in the tray within the honey pot device. The photos above show one of our female gorillas using one of the honey pots.
A study to test the influence of different kinds of environmental enrichment on the behavior of three pumas (*Puma concolor*) was conducted at Associação Mata Ciliar (AMC), unit of Jundiaí, São Paulo, Brazil. Two of the pumas studied, one male called Bem-te-vi and one female called Zara, were singly housed in two enclosures that were located side by side, while the third puma, a male called Curio, was in the corridor between the other two enclosures due to the lack of an appropriate enclosure. The animals were observed in three different phases: before exposure to the enrichment, during the enrichment, and after the cessation of the environmental enrichment.

In each phase the animals were observed during two consecutive days with three hours of observation each day (one during the morning and two in the afternoon), totaling six hours of observation in each phase. During the observations, behaviors were recorded every two minutes for each animal. The enrichment applied in the second phase consisted of: foliage from guava, cecropia, and mulberry tree; chicken blood; chili powder; a vine ball and a Boomer Ball with scent from wild dogs (*Cerdocyon thous*), as well as a “surprise box” (overlapped cardboard box containing leaves of banana tree and chicken neck/head).

The first enrichment offered in the morning session was the foliage, the blood, and the chili powder, distributed in different parts of the enclosures. At the second enrichment session, the vine ball was given to Curio and the Boomer Ball was given to Zara. Both the balls were previously placed into the enclosure of wild dogs, in order to increase the stimulus of the felines when these objects were introduced in their enclosures. For the third enrichment session, a “surprise box” was introduced into each enclosure.

Curio interacted with the enrichments faster than others, particularly with the “surprise box.” Bem-te-vi was slower to interact with the enrichments than the others, and he seemed to particularly appreciate the foliage and scents. Zara preferred the Boomer Ball and the “surprise box,” which had more damaged in her enclosure than the others.

The behavioral frequencies were recorded at the three phases and then they were individually grouped in the following categories: Resting (lie down, sleep and sit), Pacing (Stress), Movement/Exploration (walk, jump, sniff, and observe), and Maintenance (urinate, defecate, eat, drinking water, vocalize, wash, scratch, stretch, pant, rub, and sharpen claws). The mean values of the behavior frequencies before/during/after the enrichment of the three animals were compared between the three phases. It was found that the exploratory behaviors increased significantly after total removal of the enrichment (third phase of observation), while the maintenance behaviors were reduced during the application of enrichment (second phase of observation) (Figure 1).

It was concluded that the animals most likely reduced their maintenance behaviors to spend more time exploring the enrichment, as these behaviors returned to baseline after the cessation of all the enrichment. Moreover, the pumas probably increased their exploratory behaviors in the third phase of observation due to the lack of enrichment, which prompted the pumas to search for it in their enclosures. Therefore, we can see that the
withdrawal of enrichment was significant to the pumas. Furthermore, the fact that the pumas had reduced their maintenance behaviors in the second phase indicates that enrichment can prevent the appearance of stereotyped behaviors like excessive licking and scratching beyond what is necessary for maintenance, which can cause harmful wounds. The fact that Curió’s pacing had not been reduced may indicate that the types of enrichment applied, particularly when added to the limited space where he was, were not sufficient to decrease pacing. It was concluded that the enrichments applied were successful, since the animals interacted with them and they reduced excessive maintenance behaviors. It is also clear that implementation of different enrichments will avoid frustrating the animals. It is also necessary to have reasonable accommodations for the animals, because otherwise the enrichment may not be able to improve their welfare significantly.

ACKNOWLEDGEMENTS
I would like to thank all the staff from Associação Mata Ciliar (AMC), especially Dr. Cristina Harumi Adania for her ideas about the types of enrichment and for her assistance with experimental design, besides her dedication to the wild animals that AMC receives everyday. I also would like to thank Dr. Gilson Luiz Volpato for his help with statistical analysis, interpretation of the results, and for his advice.

Can You Help Provide Toys for Critters?

- This holiday season we at The Shape of Enrichment would like to spread some holiday cheer to the animals and care takers at the Parque Tematico Morelos Zoo in Tijuana, Mexico.

With donations to our ‘Toys for Critters’ drive, volunteers from The Shape of Enrichment will hand deliver BoomerBall™ items to the Tijuana Zoo. We suggest individual donations of $10 to $40 in order for us to reach our fundraising goal of $1500 so we can purchase a variety of balls and bobbins. You can donate by visiting our Toys for Critters page on Change.org at: http://www.change.org/the_shape_of_enrichment_inc/projects/view/toys_for_critters.

- The Shape of Enrichment has a longstanding relationship with Boomerball™ in countries around the world, including Uganda, Brazil, and South Africa, and we are excited to bring Boomerball™ toys to the animals of the Tijuana Zoo. For more information about BoomerBall™ visit www.boomerball.com.

On behalf of The Shape of Enrichment and the Tijuana Zoo, thank you for helping us spread holiday cheer to the animals there!

Figure 1: Frequency of behavior of pumas along the time * indicates statistical differences from the same behavior between the periods (before/during/after enrichment) (ANOVA, repeated measures, =0,05).
Looking for Love in All the Wrong Places: Unusual Help for a Bat Colony

By Margaret Rousser and Andrea Dougall, Oakland Zoo, California

The Oakland Zoo houses 30 fruit bats: 19.0 Malay flying foxes (Pteropus vampyrus) and 11.0 island flying foxes (Pteropus hypomelanus). The exhibit backs up to a hillside with the enclosure height measuring 50 feet at the tallest point. It is designed in a hexagonal shape to encourage flight, with wire mesh “highways” running throughout. Ropes are strategically placed to allow bats access to higher levels of the exhibit without flight, to accommodate a few individuals who are incapable of flight due to prior injuries. Large windows in the spacious night quarters allow zoo visitors to observe bats in all weather conditions.

Both species have a breeding season that begins in late August/September and extends through December every year. Typically, males approach females by flicking their wings and vocalizing. They gauge the female’s receptivity by grooming her after which they will approach and mount her from behind while biting the back of her neck. Many of these courtship behaviors are observed in the colony at Oakland Zoo—but our troop is composed solely of male bats. Therefore, frustration levels during these time periods often reach epic proportions, and the unwelcome advances are often met with fighting. For several years, the dominant bats have been getting progressively more “forward” with the subordinate bats; the resulting injuries have included everything from swollen penises to rectal bleeding. Not wanting to separate the bats for fear of making things worse, keeper staff decided that the bats needed a new enrichment strategy.

Our lack of females was causing the bats to exercise their frustration through displaced, inter-bat aggression, but introducing female bats was not an option for us. Enter the teddy bear! We decided to use soft plush toys in hopes that they would serve as an alternative outlet for the bats’ aggression. Plush animals about the same size as the bats themselves were hung (upside down) from the mesh on the ceiling of the bat nighthouse. Dubbed “surrogates” for lack of a more politically correct term, the plush were located in strategic spots where we had seen evidence of injuries occurring. While we did not often see the plush animals in action, they were soon covered in the oily brown discharge of bat scent glands. We surmised that the bats were rubbing on the toys and exercising their frustration in a constructive manner. While the number of injuries resulting from fighting remained constant, the number of injuries to the urogenital area decreased dramatically in the first year, and the trend continued into the second year.

The success of our enrichment plan was measured in the number of urogenital injuries before and after adding the plush animals. In 2007, prior to implementation, the total number of reported injuries was 29, an average of nearly 2 injuries per week. In 2008, with plush animals present, the total number of injuries reported was 3, less than 1 per month and a reduction of nearly 90% from the previous year. Our success continued in 2009, with only one reported injury the whole season. Injuries to other parts of the body were not counted in the results. The number of injuries counted reflects the number of times the injury was reported by a keeper between the dates of September 1 and December 31 of the indicated year.

Our use of enrichment has made frustrating breeding seasons more tolerable for our bats. The novel enrichment strategy was a success on two levels: we improved our animals’ psychological welfare and reduced the number of urogenital injuries, resulting in fewer catch-ups and medical procedures.
Can Social Enrichment for a Grison Stop Pacing?
By Eduardo Bessa, Zoologico da Universidade Federal do Mato Grosso, Cuiaba, Mato Grosso, Brazil

Grisons (Galictis vittata) are carnivorous mammals from the cerrado biome that live in groups of up to five individuals. They are more active at night but may also be seen during the day foraging within wide home ranges for food. The Universidade Federal do Mato Grosso (UFMT) zoo housed a single animal received from a family that kept it as a pet. The animal responded to visitors and was one of the main attractions of the zoo, but he frequently demonstrated stereotypic pacing. The small enclosure at the zoo contrasts with the wide home ranges of these carnivores, which may be one reason for the pacing. I thought that giving the animal a situation more similar to what it would have in the wild might help and decided to try social enrichment by introducing additional grisons. In general, I aimed to reduce the pacing and enhance the grison’s habitat use.

I recorded eight one-hour sessions of the grison’s behavior before the introduction of the conspecifics for social enrichment. It used to spend 58% of the time pacing, 24% sleeping, and 11% in rocky shelters. It also spent more time in the front part of the enclosure.

Three More Grisons
The opportunity to see how social enrichment would influence the pacing came when three other grisons were received, first a pair of pups and then another adult male kept by a family. Both arrived within a few months interval. After quarantine, they were added to the enclosure with the first grison. I conducted eight one-hour observation sessions, recording both habitat use and frequency of occurrence of different behaviors.

Social Enrichment Observations
When newcomers first arrived I was delighted by the results. The first grison’s frequency of pacing decreased to one third, and he started performing some behaviors he had never displayed before. Plus, he was using more of the enclosure than before. The zoo is about 220 km away from my campus, so a few months later, I found that the results I first observed were no longer happening. Six months after the introduction of the social enrichment, I recorded more data observations.

The pacing problem and the lack of activity returned to what they had been before. The use of the enclosure was even more restricted to only a few parts of it: the grison would spend more than 90% of the time in only 20% of the area. More worrying was that the other animals started doing the same, pacing around the enclosure in places not taken by the first grison. The zoo staff and I did not know if that was a common behavior for them before the arrival at UFMT zoo or it started by mimicking their companion.

Conclusions
The data recorded show that social enrichment is not enough to reduce definitively the behavioral problems caused by captivity in grisons, even though it may be an essential part of well-being for this species. If mimicking is confirmed to cause the others to start performing pacing, placing newcomers in the same enclosure of a stereotyped animal should be avoided. Perhaps recurrent physical or sensory enrichment could show better results, because they may simulate a change in the place the grisons occupy, as if they had walked elsewhere in the home range area. Another important point is the importance of long-term follow up with any enrichment technique, since it may stop working or become just another part of the routine and lose the enriching value.

Acknowledgements
I wish to thank the UFMT zoo staff, namely Luiz Carlos de Sá Neves, Itamar Camaragibe Lisboa Assunção and Benedito Rondon, for granting me access to the grisons and for dedication to the conservation of cerrado’s fauna.
Trying Olfactory and Feeding Enrichment for Ocelots

By Larissa Nahas, Jonas Byk, and Kleber Del-Claro, Federal University of Uberlândia and Sabiá’s Park Zoo, MG, Brazil

Aiming to provide a more challenging environment for two male and one female ocelots (Leopardus pardalis), an enrichment program was developed between 2007 and 2008 at the Sabiá’s Park Zoo, in Uberlândia, Brazil. One of the males was wild caught and maintained in an enclosure separate from the pair before and after our study. The pair was born in captivity. The program was divided in three phases: pre-enrichment (for three months), enrichment (for five months), and post-enrichment (for three months).

The behaviors were observed for 40 hours in each phase. Olfactory and feeding enrichment techniques were applied.

Olfactory enrichment:
- Lemon balm and leaves wrapped in paper
- Clove and cinnamon inside pumpkins, which were hung with cotton string from trees inside the enclosures
- Oregano inside eggshells
- Mint scattered on the enclosure floor

Food enrichment:
- Ground meat diet inside animal shapes (rodents, birds) made with modeling paper and painted with non-toxic paint
- Ground meat diet inside hollow pumpkins hung with string from trees
- Ground meat diet hidden inside paperboard boxes, which also were hung from cotton string in trees
- Cow liver mixed with water in a blender to make a paste, placed in plastic bags, frozen, and the plastic removed

The items were offered randomly three times per week during the enrichment phase. Each item was offered two or three times, one item per animal, and in several locations of the enclosures. We found that the techniques employed were able to increase the animals’ behavioral diversity; reduce the captive-born male’s pacing, which was frequent before the enrichment; increase the frequency of exploratory behaviors in the wild-born male; increase the time percentage in which all individuals have remained visible to the public.

There were some differences in the individuals’ responses to enrichment items. Only the males were seen interacting with the items. The olfactory items elicited an insignificant number of interactions. The frozen liver paste was the most important item to the wild-born
male. When that item was placed in the enclosure, he spent about two hours licking and eating it. He also attacked the boxes and animal shapes containing food. The captive-born male interacted mainly with the animal shapes, pumpkins, and bags containing food. He interacted with the items in a less aggressive way than the other male. But he defended items, mainly the pumpkins, from the female when she approached them.

The female was not observed interacting with the items. Yet in the post-enrichment phase, she began demonstrating new behaviors, including reproductive ones. Before the enrichment, only agonistic interactions between the male and female pair were observed. We feel that the feeding enrichment items used in this program were effective in reducing stereotypical behaviors and increasing species-typical behaviors, improving the life of these animals. However, enrichment must be an ongoing procedure—once it was ended, a return to atypical behavioral patterns was observed. Another benefit of the enrichment was the participation of zoo workers, who were able to observe the benefits. We hope that there will be an increase the use of enrichment techniques in central Brazil.

### Shape Regionals—What Are They, and What Do They Do?

SHAPE—Regionals were created to further the mission of The Shape of Enrichment, Inc. within specific geographic regions. These satellites of Shape are operated by dedicated volunteers living and working in the region. The regionals are formed with the permission and support of The Shape of Enrichment, Inc. and are operated in conjunction with SHAPE—International personnel.

Each SHAPE—Regional Committee serves to guide existing regions with their projects and especially to work with new regions during their formation. Each region has its own committee to organize events that they feel will help promote enrichment in their region. They may also raise funds to subsidize activities. If you are interested in learning about, or participating in, the development of a SHAPE—Regional in your area, please contact our SHAPE—Regionals Chair, Julian Chapman, at julian.chapman@paingtonzoo.org.uk.

The SHAPE—Regional committees work to promote the theory and practice of environmental enrichment in their region by holding conferences or workshops. The first Regional Environmental Enrichment Conference was held by SHAPE—UK-Ireland in 2006. Since then, five other regionals have been set up: Africa, Australasia, Brasil, Southeast Europe, and, most recently, North America. To visit their sites, visit our main website at www.enrichment.org and select a site from the “Regionals” drop-down menu. Find out about activities, news, and ideas from each of the regions, and make some new connections with your colleagues around the world!
Creating Immersion Habitats for Enrichment

By Gareth Thomas, Edinburgh Zoo, Scotland

The ideal zoo enclosure should serve the animals' needs, serve the needs of the staff that maintain it, and enhance the experience for the visitors who view it. Creating or replicating the habitat is important to help tell the story of the animals or plants on display by providing a sense of geography through themed immersion. This is an often overlooked part of enclosure construction.

Enclosures should provide enough space with particular attention being paid to physical comfort areas where the animals can hide, feel safe, have somewhere to sleep, and generally be content with their surroundings. We can improve the limited space available to work with in the average enclosure by enhancing depth, height, and perspective by the careful choice and placement of plants.

For the gardens team, the word enrichment can bring all kinds of thoughts and ideas and can encapsulate many areas of our work here at Edinburgh Zoo. Enrichment usually involves plants of many different shapes, sizes, smells, and colors, from large single trees to tropical looking palms, from medium woody shrubs to aquatic water lilies, from large fruiting trees to vegetables and herbs. Along with the horticultural forms of enrichment, many hard landscaping features will also be used to enrich a particular enclosure; for example, water features, pools, waterfalls, spray systems, climbing structures, caves, dens, and rock work.

Over the last few years, the gardens team has been involved with a number of projects from the initial stages of design, right through to the opening of the exhibit. Here are descriptions of two of our enclosures and many of the various forms of enrichment we applied to each design.

Budongo Trail

Edinburgh Zoo’s world leading Chimpanzee Enclosure

Although the new chimpanzee enclosure was great for the animals and for visitor perception alike, it presented the gardens team with a few challenges. Chimpanzees are such intelligent animals and need that little bit extra enrichment to make their everyday lives more exciting and interesting. This intelligence presented a few problems, like how to protect our plants from being eaten and destroyed and how to keep the enclosure looking natural and not run down and untidy.

We solved these problems in many ways. We hotwired certain areas with grass-looking hotwires, which kept the chimps at bay but were not too visible to the public, unlike the old shiny metal wires that adorn many of our older enclosures.

This created large green areas that would stay “green” for year after year with only a little maintenance from the gardens team. These beds were planted up with species such as, ...
Phyllostacys and Fargesia (Bamboo), and Trachycarpus fortunei (Chusan Palm). We also brought in large coppiced Salix, (Willow) and Acer (Maple) trees, which serve two purposes: they soften the climbing structure and give the chimps something to nibble on and forage through. Throughout the enclosure we sowed a primate wildflower mix, (we liaised closely with a local seed distributor to create this), which included species such as Centaurea nigra (Common Knapweed), Galium verum (Lady’s Bedstraw), Plantago lanceolata (Ribtwort Plantain), Teucrium scordina (Woodsage), which all encourage natural foraging behavior and add interest to the enclosure, as well as helping in the study of plant animal interaction. This also encourages invertebrates, which in turn will go towards helping increase bio-diversity in the Zoo.

Many large trees were also planted, for example, Betula, (Birch), Alnus (Alder), Fraxinus (Ash), and Acer (Maple) to give the enclosure points of interest for screening areas, adding depth, creating different views into the enclosure, and out of the enclosure for the animals.

Vegetables and herbs such as tomatoes, lettuce, beans cabbages, basil, coriander, fennels, and mint, all produced in our own on-site nursery. They have been planted in large numbers to give areas where the chimps can forage, at their own pace and not have to compete for the “best nibbles.” This use of vegetable and herb enrichment stimulates the chimps and encourages natural behaviors.

Water plays a major role in the enclosure, with a stream and a large moat at the south end of the enclosure. This aids in cooling the chimps on hot days in the summer and it also plays a role in the feeding. Keepers can put various forms of food in the stream and the chimps have to forage around in the water to get at it. The margins of the moat were planted with species such as Iris pseudacorus (Yellow Flag Iris) Mentha aquatica (Watermint), Phragmites australis (Common reed). All species were plated into coir strips to aid in their establishment. Nymphaea (Water Lily), and Elodea Canadensis (Canadian Pond Weed) were submerged as aquatic perennials in the moat. This successional planting from water to marginals, shrubs to trees works really well and is what you would find in nature. The landscaped stream and moat all go towards achieving a naturalistic look. Both internal and external areas provide the chimps with the choice of isolation if the social relationships are changing; this is something you do not always see in primate exhibits.

With a little work from the gardens team, keepers, and property and estates, throughout the year we continue to provide the animals, staff, and visitor with a leading exhibit.

Lemur Walkthrough
A walk on the wild side
Our lemur enclosure at Edinburgh Zoo is a walkthrough exhibit where the public can get up close and personal with the lemurs and plants if they so wish. The enclosure is designed to replicate part of a Madagascan rainforest. To achieve this look, we used plants with bold form and texture that had a tropical look and feel to them; for example, Paulownia tomentosa (Foxglove Tree), Phyllostacys and Fargesia (Bamboo), Trachycarpus fortunei (Chusan Palm), Cordyline australis, (Cabbage Palm).

The planting is set around and through two large climbing structures, which are made up of large diameter lengths of bamboo. The structure ties in nicely with the overall theme and looks very naturalistic. A bark path runs through the centre of the enclosure, which gives the visitor the perception of walking through a little piece of rainforest, and using bark as an aggregate for the path helps soften it into the overall look of the enclosure. Using natural materials for the climbing structure and having semi-mature to mature plants all goes towards providing interesting, stimulating enrichment for the animals, again producing natural behaviors.

Working closely with animal keepers, the gardens team can use all these techniques to produce modern, exciting, and refreshing enclosures that stimulate and encourage the natural behaviors of our animals here at the Zoo.
In the spring of 2008, I was hired as a seasonal animal care specialist for the Racine Zoo’s Sertoma Farm area for the summer. I cared for 50 animals, including a variety of chickens, goats, sheep, cows, donkeys, and three camelids that were on loan to our facility from a local farm. The three camelids that I was fortunate to work with were an alpaca named Mushroom and two llamas named Tyson and Diamond. Over the first few weeks, I noticed how intelligent these three animals were. I also observed many undesired behaviors, as well as a sense of boredom throughout each day. Diamond was the youngest llama. He was very people oriented and friendly, however he was impatient at times and often became pushy at feeding time. Diamond and Mushroom seemed to be competing for dominance with each other while Tyson was clearly very shy and displaced from the group. During their afternoon feedings, they often had disputes over food and territory, which resulted in Diamond and Mushroom stealing Tyson’s food. It also resulted in a lot of spitting.

With the help of our supervisor, Beth Rich, and lead animal care specialist and animal training coordinator Cydney Peterson, I developed a training plan to establish good manners and basic training while combining enrichment for these seasonal residents. My plan consisted of training the camelids to target, station, and paint on canvas. For each animal, we successfully established targeting by hand and to a jollyball. Next they learned to station as a group at their own individual feeders. Stationing helped eliminate food aggression and territorial disputes during their feeding sessions and it helped Tyson regain some dominance and become more oriented in the group. Towards the end of the season, my work on the farm started allowing me more time for enrichment and training, so I decided to try teaching the camelids how to paint. I believed the painting could be a fun form of enrichment to relieve boredom and help stimulate their minds. I wanted to challenge these animals more to see what behaviors they were capable of learning.

What method would I use to train them to paint? My initial thought was to train them to hold a paintbrush handle in their mouth. However, after trying it a few
times, it seemed too invasive and made them feel uncomfortable. I needed a method that was fun and peaked their curiosity. I remembered that while training them to target, Diamond started to push the target around with his nose and I captured that new behavior immediately with the verbal cue “push,” followed by positive reinforcement. Even when we were not training, I would observe the camelids pushing around the jolly ball that hung in their yard. Camelids tend to inspect new items with their noses. This gave me the idea for a new method for animal painting.

I took a standard tennis ball and drilled a hole in one side. Then I stuck the handle of a short paintbrush inside the ball. I used some twine to suspend the tool from a rafter on the exterior of the llama shelter and then hung a canvas on the post in front of the new tool. Immediately, Diamond and Mushroom were intrigued and explored both the tool and canvas. During individual sessions, I put paint on their brush and requested them to “target” and “push.” As they did, I rewarded them for approximate behaviors first, and then started to reinforce only the longer brush strokes or a series of brushstrokes, which encouraged them to put more effort into their painting. Diamond and Mushroom had accomplished the new behavior within three sessions. They both enjoyed the training and enrichment so much that when I brought the supplies into the yard, they would often follow me closely and then wait by my side until they could start painting. Tyson, on the other hand, took longer to train. At first he did not participate much. He had to become desensitized to the jolly ball and tennis ball. He also required more individual training without the possibility of the other two camelids interfering in his session. After three weeks of training, Tyson successfully painted on canvas. As he painted, I noticed an excitement and confidence in him that I had not seen before.

The training sessions lasted between 5 and 20 minutes for each individual, based on their mood and the amount of time I had to train that day. I modified the painting tool and added a plastic ring between the tennis ball and the brush to make it more sturdy. Additionally, I hung the tool with twine on both sides so that the brush would not swing around and touch the animal’s face.

During the last 3 weeks they were in my care, they completed 16 paintings. Some paintings were completed by an individual and others by combined effort. This enrichment method was very successful in that it invoked curiosity in these camelids and challenged their intellect, thus increasing their activity, and it improved the social order within their group. Over the summer, I noticed an increased trust and cooperation in our keeper/animal relationship. Not only did the camelids have fun painting, but the zoo visitors and AZA members from the nearby conference enjoyed watching them paint during their sessions. It was a fun and creative method that successfully enriched our seasonal camelid residents.
Training and Enrichment Workshop for Zoo Animals

6-10 December, 2010
Instructors: Gail Laule, Margaret Whittaker, and Valerie Hare
Active Environments and The Shape of Enrichment are proud to present the fourth Training and Enrichment Workshop for Zoo Animals, hosted once again by the Oakland Zoo, Oakland, California. This unique five-day workshop is designed for keepers, managers, supervisors, curators, and veterinarians working in zoos. The workshop will present an array of topics on behavioral management of captive animals, with focus on environmental enrichment, positive reinforcement training techniques, and the problem-solving process. Workshop format includes lecture, discussion, small group projects, demonstrations, and multiple hands-on training and enrichment opportunities with Oakland Zoo’s diverse collection. The registration fee is guaranteed to be under $800 and includes the following:

• 6 nights stay in the Workshop hotel (double occupancy; single rooms available at extra charge)
• All workshop materials
• All breakfasts, lunches and snacks during the workshop
• Icebreaker, dinner, and closing banquet (3 dinners)
• Transportation to and from workshop and airport
• Commemorative Workshop T-shirt

For more information contact: Active Environments, Inc., 805-737-3700, e-mail Gail Laule at moonshadowe@earthlink.net.

2011 International Conference on Environmental Enrichment

The 10th ICEE will be held 13-20 August, 2011 in Portland, Oregon, United States, hosted by Oregon Zoo and Oregon Nation Primate Research Center. More information will be available soon; check our website at www.enrichment.org for updates!

Correction

In the 19 (1&2) issue of The Shape of Enrichment, the article And Now for Something “Otterly” Different, by Tony Dobbs, Tony’s institution was incorrectly listed as Bristol Zoo—the correct institution is the London Zoo. Our apologies!

We’re on Facebook and Twitter!

If you are on Facebook or Twitter, look for us at facebook.com/shapeofenrichment and twitter@shapeenrichment. Keep up to date on what’s happening at Shape and the Shape Regionals, find other enrichment-minded folks, submit photos of your favorite enrichment items, and get news about conferences and changes to our website. We also have a Facebook Cause page, and we recently received our first check for donations there—THANK YOU for your generosity! If you would like to donate your birthday wish and gifts to us, visit our cause page (search “Shape of Enrichment” on Facebook’s Cause page).

If you’re participating in social media, be social with us!

Shape Now Accepting Submissions for Our $1,000 Travel Grant to the 2011 ICEE

The Shape of Enrichment Travel Grant provides $1,000 for attending the International Conference on Environmental Enrichment and is awarded to the highest scoring paper submitted for judging. A panel of judges, using a predetermined point system, will rate each anonymous paper. The nine criteria used in the judging are:

1. Is this a high priority or unusual taxon?
2. How well does this project address the animal’s behavioral needs?
3. Is this enrichment based on the taxon’s natural history/behavior?
4. Does this enrichment empower / offer choice to the animal?
5. How innovative is this enrichment?
6. Can this enrichment be adapted to other taxa or uses?
7. How practical is this enrichment? (e.g. ease of use, cost of materials, clean-up, etc.)
8. How well has this enrichment been assessed? (Note: scientific method is NOT required)
9. Overall rating.

The paper with the most points and/or the highest rank, wins! In the case of a tie, the editor-in-chief will select the winning paper. To submit an entry for the grant, visit our website at www.enrichment.org, and download the application form under the ICEE heading. Good luck!

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The Enrichment /Training Video Library

This library consists of video tapes donated in the interest of sharing enrichment techniques, a collaborative effort between The American Association of Zoo Keepers, Inc. (AAZK) and The Shape of Enrichment, Inc. All videos are available in VHS-NTSC (North America), -PAL, or -SECAM formats. Please do not copy these tapes or request more than three at a time. There are four geographical areas handling videos. If you live in Europe, Africa, or the Middle East, contact our video volunteers at videoEurope@enrichment.org. If you live in Australia, New Zealand, or the nearby South Asia regions, contact videoAusAsia@enrichment.org. If you live in South America, contact videoSA@enrichment.org. If you live in the U.S. or anywhere else not mentioned, contact our main office at video@enrichment.org. Be sure to include your full address and the VHS format required.

Information on the library and order forms can also be found on our website at www.enrichment.org.

GENERAL ENRICHMENT AND TRAINING

• A Look at Enrichment, The Shape of Enrichment, Inc., San Diego, California (Video or CD) 37 min.
• That’s Enrichment!, The Shape of Enrichment, Inc., San Diego, California (Video or CD) 12 min.
• Enrichment at the Taronga Zoo, Sydney, Australia 5 min.
• Behavioural Enrichment by the People for the Animals, Rotterdam Zoo, The Netherlands 18 min.
• Environmental Enrichment: Advancing Animal Care, UFAW, U.K. 38 min.
• Metro Washington Park Zoo Environmental Enrichment Program, Portland, Oregon 16 min.
• And Enrichment For All, San Diego Zoo, California 19 min.
• Menagerie’s Medium, San Diego Zoo, California 11 min.
• Habitat Enrichment Ideas from the Topeka Zoo, Kansas 32 min.
• Enrichment Day at Utah’s Hogle Zoo 42 min.
• ABC-123 Enrichment at Hogle Zoo, Utah 10 min.
• Taking Enrichment to the Next Level, Hogle Zoo, Utah 10 min.
• Enrichment at THE ZOO Including Tamarsis on the Loose, Gulf Breeze Zoo, Florida 40 min.
• Mixed Species Exhibits by Animal Choice, Gulf Breeze Zoo, Florida 8 min.
• Columbus Zoo Enrichment, Ohio 7 min.
• I Get a Kick Out of You and Manatee Training and Enrichment, Ohio 5 min.
• Lincoln Park Enrichment Day, Chicago, Illinois 15 min.
• Sedgwick County Zoo Play Days, Wichita, Kansas 50 min.
• Target Training, Brookfield Zoo, Illinois 12 min.
• The Training Game, Brookfield Zoo, Illinois 16 min.
• Operant Conditioning at the Memphis Zoo, Tennessee 90 min.
• Animal Training for Different Species, Columbus Zoo, Ohio 58 min.

PRIMATE ENRICHMENT AND TRAINING

• Gorilla Training at the Belo Horizonte Zoo, Brazil
• Primates with Boomer Balls, Boomer Ball 83 min.
• Training Program for Semen Collection in Gorillas, Henry Doorly Zoo 38 min.
• Gorilla Enrichment, Columbus Zoo, Ohio 18 min.
• Gorilla Enrichment, Denver Zoo, Colorado 15 min.
• Gorilla Husbandry Training for Assisted Reproduction at Disney’s Animal Kingdom, Orlando, Florida 22 min.
• Orangutan Medical Behavior Training, Brookfield Zoo, Illinois 10 min.
• Stressless Research Monkey Capture, Animal Welfare Institute 20 min.
• Enrichment at the Bronx Zoo Monkey House, New York, New York 10 min.
• Primate Enrichment, Dallas Zoo, Texas 23 min.
• Primate Enrichment, Burnet Park Zoo, New York 34 min.
• Primate Enrichment, Columbus Zoo, Ohio 3 min.
• Bungee Jumping Monkeys, Philadelphia Zoo, Pennsylvania 18 min.
• Three Observations of Callithrixids Using an Artificial Gum Tree, The Lubee Foundations, Inc., Gainesville, Florida 15 min.

CARNIVORE ENRICHMENT AND TRAINING

• Carcass Feeding at Wildlife Safari, Winston, Oregon 17 min.
• Carcass Feeding at Folsom City Zoo, California 5 min.
• So Many Cats, Cincinnati Zoo, Ohio 4 min.
• Enrichment for Carnivores, Sunset Zoo, Manhattan, Kansas 23 min.
• Carnivore Enrichment, Columbus Zoo, Ohio 5 min.
• Carnivore Enrichment, Kolmarden Zoo, Sweden 74 min.
• Cat Enrichment, Dallas Zoo, Texas 13 min.
• Tiger Enrichment, Disney’s Animal Kingdom, Orlando, Florida 8 min.
• Felid TAG DAK Training, Disney’s Animal Kingdom, Orlando, Florida 21 min.
• Bears with Boomer Balls, Boomer Ball 68 min.
• The Bear Necessities: Captive Enrichment for Polar Bears, UFAW, U.K. 20 min.
• Building a Polar Bear Den at the Calgary Zoo, Canada 75 min.
• Bear Exhibit Renovation, Woodland Park Zoo, Seattle, Washington 17 min.
• Working For a Living, Folsom City Zoo, California 13 min.
• Enrichment for Gray and Harbor Seals, National Aquarium in Baltimore, Maryland 6 min.
• Sea Otter Enrichment, Monterey Bay Aquarium, California 5 min.

OTHER MAMMAL ENRICHMENT AND TRAINING

• Fruit Bat Enrichment, The Lubee Foundations, Inc., Gainesville, Florida 16 min.
• Olfactory Enrichment: Rodrigue’s Fling Fox, The Lubee Foundations, Inc., Gainesville, Florida 4 min.
• Commercial Bat Enrichment, The Leather Elves and The Lubee Foundations, Inc., Gainesville, Florida 5 min.
• Elephant Feeder Ball Introduction, San Diego Wild Animal Park, California 12 min.
• Snow Fall for Elephants, San Diego Wild Animal Park, California 6 min.
• Kansas City Giraffe and Rhino Enrichment 45 min.
• Rhino Training, Disney’s Animal Kingdom, Orlando, Florida 15 min.
• Mission: Enrichment for Hoofed Stock, Dallas Zoo, Texas 18 min.
• Kangaroo and Wallaby Enrichment at the Philadelphia Zoo, Pennsylvania 5 min.
• Tree Kangaroo Pouch-Check Training, Brookfield Zoo, Illinois 5 min.
• Marine Mammal Enrichment, National Aquarium in Baltimore, Maryland

BIRD ENRICHMENT AND TRAINING

• Positive Approach to Parrots as Pets. Tape 1: Understanding Bird Behavior; Tape 2: Training through Positive Reinforcement, Natural Encounters, Inc., Lakeville, Minnesota 69 min. each tape
• Kings of the Wind, Natural Encounters, Inc., Lakeville, Minnesota 38 min.

OTHER ANIMAL ENRICHMENT AND TRAINING

• Octopus Enrichment at the Cleveland Zoo, Ohio 6 min.
Downloadable Subscriptions

The Shape of Enrichment now offers downloadable subscriptions. We strongly encourage you to consider requesting this “green” option! Subscribers to the downloadable version of The Shape of Enrichment will enjoy many benefits:

• E-mail notification when each issue is published and ready to download — no more waiting for the postal service!
• No price increase
• Store your issues on your hard drive — no more lost or torn issues!
• Print only what you need; re-print whenever you like

To take advantage of our downloadable subscriptions, you MUST be a registered user on our new website. To register, go to www.enrichment.org, click on Register, and complete the form. Be sure to make a note of your user name and password — you will need these when you log on! Also, if your contact information changes — especially your e-mail — remember to update your user account.

Complimentary subscriptions will only be downloadable; hard copies will no longer be available. Hard copies of The Shape of Enrichment will still be available for purchase; but increased postage fees will be reflected in the cost of the subscription and back issues.

Very soon, all The Shape of Enrichment back issues and some of the International Conference on Environmental Enrichment (ICEE) Proceedings will also be available through our Publication Download feature. Register now to be notified when these become available!

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