Enrichment Suggestions for Captive-born, Hand-reared Meerkats Held in Captivity

March 2010
(Last Updated: October 2019)

Deborah Wettlaufer and Liesl Smith
Cheetah Outreach, Cape Town
Enrichment

Animals in captivity have a lot of time on their hands. Whereas wild animals would fill their time with activities such as hunting, searching for water or shelter, protecting their territory or searching for a mate, captive animals very often are provided all of these. This could potentially create problems such as boredom, frustration, stereotypic behaviors and stress. Undesirable behaviors include self-injurious actions like excessive grooming; abnormal behaviors such as regurgitation and reingestion; aggressive behaviors; and stereotypic behaviors. Behaviour is an important indication of welfare and enrichment enhances welfare of animals in captivity.

Enrichment becomes a valuable and necessary practice by creating activities or providing stimulation that maximizes their quality of life and leads to inquisitive behavior. By enriching the animal’s environment, you empower the animal to have control over its environment and you give the animal a choice. Ignoring something is still a choice.

Apart from the fact that enrichment provides methods of passing time, the added physical and mental stimulation might also cause better reproductive success and improve visitor’s experiences since the image of healthy and well-adjusted animals are promoted.

Different forms of enrichment used for captive animals today include:

- Enclosure Design
- Feeding or foraging
- Visual and Auditory
- Olfactory
- Novel Objects and Toys
- Exercise
- Social Interaction/Tactile
- Behavioural Conditioning

Enrichment should be considered part of the daily husbandry routine at all responsible animal care facilities. An efficient enrichment programme can be more important than the size of the enclosures the animals are kept in. Environmental enrichment is not a luxury but a management tool.

When developing an enrichment programme at a captive facility, the habits, behaviours and nature of the species, and the personality of the specific individual need to be considered.

Enrichment suggestions for the meerkat include the following:
Enclosure Design

Enclosures should be designed in order to address the needs for space, shade and sun, shelter, privacy, stimulation, elevation and where appropriate, public viewing.

When designing enclosure layouts the following should be incorporated:

- **Areas of Sun and Shade**
  Meerkats regulate their body temperature by exposing the sparsely covered skin on their bellies to the sun when it’s cold. To reduce heat, they sprawl on their bellies on cool ground in the shade. The meerkat enclosure at Cheetah Outreach is built with low walls so it receives full exposure to the sun. A sheltered area built with tin and shade cloth provides shelter from wind and rain as well as shade on hot days.

- **Shelter/Den**
  In the wild, meerkats sleep and shelter in underground dens accessed by a network of tunnels. Our meerkats use a plastic pipe to enter an enclosed wooden box that acts as a den for them. Inside a warm bed is supplemented with hot water bottles during cold nights.
- Water
Water should be provided in solid, non-toxic containers. Containers should be placed in an easily accessible and shaded area. All water containers should be disinfected on a regular basis.

- Logs
Big logs can be packed at angles to one another. Alternatively flat pieces of logs can be stacked loosely on top of and against one another. Logs provide areas to forage in, to hide food in, and elevated sites to sit or stand on.

- Elevated Areas
In the wild meerkats standing guard perch on lookout-posts, such as dead trees, shrubs and termite mounds, watching for approaching predators. In captivity elevated areas in the form of elevated walkways, logs, rocks and mounds of dirt, give meerkats a sense of security by allowing them to survey surrounding areas. At Cheetah Outreach our
meerkats have access to walkways level with the low cement walls so they can see out of their enclosure as well as mounds of dirt, large rocks and a tower built of poles.

- **Tunnels**
  In the wild meerkats build and use tunnels inside their burrows. We have created an above-ground tunnel system out of plastic piping that allows them to travel around their enclosure through tunnels. Parts of the pipes are open on one side and covered with mesh so the meerkats can see outside, giving them a good vantage spot to survey surrounding areas. Both enjoy running back and forth through the tunnels. We also have a tunnel connecting the two separate enclosures which can be blocked off when necessary.

- **Areas for Digging**
  Meerkats are burrowing animals and spend a large percentage of their time digging and maintaining tunnels or digging for insects. Most of the enclosure at Cheetah Outreach is composed of bare earth so our meerkats can dig and forage.
Vegetation
In our meerkat enclosure, we have planted indigenous vegetation that replicates their naturally arid habitat. Vegetation provides cover as well as areas for foraging.

Privacy
Concealed, private areas should be provided in all meerkat enclosures. Concrete walls, shade cloth and vegetation can be used to provide privacy. Besides a den built of a closed wooden box accessed by pipe, our meerkats also have a network of plastic tubes dug into mounds that they can hide in.
Security
Meerkat enclosures should be roofed and have a reinforced concrete foundation to prevent escape through climbing or digging. The meerkat enclosure at Cheetah Outreach is built with concrete walls and a base of concrete reinforced with rock and wire to prevent meerkats from digging out. The roof and sides of the enclosure are screened with wire fencing to keep the meerkats from climbing out.

Habitat modifications
Habitat modification by moving and changing exhibits inside the enclosures might provide stimulation.
Feeding

- **Burying Food**
  While foraging, meerkats spend much of their time digging for food and use the long claws on their forefeet to dig prey out. Burying insects in a sandbox where they can’t escape encourages our meerkats to search for and dig up their food.

- **Foraging for Food**
  Since meerkats spend much time in the wild foraging for food, we try to encourage foraging during walks or visits to other enclosures. While on walks or in unfamiliar enclosures, our meerkats are constantly searching and digging for food. By overturning logs and rocks, we increase the chances of them finding insects and other prey. During walks, our meerkats have caught and eaten snakes, frogs, lizards and insects.

- **Hiding Food**
  Meerkats are foragers and scattering or hiding food in their enclosure encourages this natural feeding behaviour. At Cheetah Outreach meat is often placed in holes that have been drilled in a dead tree stump and logs or scattered on logs and branches. Food is sometimes placed inside pine cones, a plastic treat ball or toilet paper rolls to encourage our meerkats to use their cognitive skills to retrieve food by either grabbing with teeth or claws.
- **Pumpkins**
  Hallowing out a large pumpkin and leaving some of the seeds inside will keep meerkats busy for a long time. Holes in the pumpkin allow meerkats to reach inside and grab seeds with teeth or claws.

- **Watermelons**
  Hallowing out a large watermelon, leaving some of the seeds inside and putting small pieces of fruit or mealworms inside will keep meerkats busy for a long time. Holes in the pumpkin allow meerkats to reach inside and grab seeds with teeth or claws. They also enjoy eating the flesh of the watermelon.
- **Box with Straw**
  Cutting holes in a cardboard box, filling it with straw and then layering the straw with small pieces of fruit is a great way to encourage foraging and digging for food. The meerkats reach through the holes and dig in the straw to uncover treats. A simple and inexpensive form of enrichment.

- **Egg Carton**
  Putting small pieces of food in an egg carton encourages meerkats to search and dig for their food.
Day-old Chicks
Dead baby chicks can supplement normal diet and add enrichment by prolonging the feeding activity. Chicks should be de-yolked prior to feeding.

Meat with Fur
Sections of horsemeat with fur can be given. Apart from providing roughage, it also changes the texture of the food and increases the length of feeding activity.
- **Live Insects**
  Wild meerkats are primarily insectivores, with about 82% of their diet composed of insects. Not only are insects nutritious for them but giving them live provides much enrichment for meerkats in captivity. We give live mealworms, crickets and cockroaches to our meerkats on a regular basis.

- **Whole Fruits and Vegetables**
  Feeding whole gem squash or corn on the cob encourages meerkats to work for their food by digging, picking and chewing flesh and seeds or corn kernels out. A squash or piece of corn cob can keep meerkats busy for a long time. Berries are a favourite treat of our meerkats.

- **Other Food Items**
  Other food treats given to our meerkats on a limited basis include honey; coconut oil; small pieces of coconut; raw peanuts in shells; and popcorn dog treats.
Visual and Auditory

Objects that provide visual and auditory stimulation include the following:

- **Outside Stimuli**
  Passing trains, motorbikes, running children, other animals, laborers, bicycles and wheelchairs. Having visual access to some of these not only provides mental stimulation but also increases activity as the meerkats often run back and forth in their enclosure to get a better look at outside activity. Having an elevated ledge gives the meerkats an excellent vantage point to use their acute eyesight to view all activities in the surrounding area.

- **Other Animals**
  Walking different types of animals on their leads past the meerkat enclosure provides much interest and stimulation. The meerkats become excited and very vocal when another animal is walked by their enclosure or up to the fence.
Olfactory

Meerkats have a phenomenal sense of smell and much time is spent sniffing and marking objects, both inside and outside their enclosure.

- Providing Scents
  A number of scents have been tried with the meerkats at Cheetah Outreach. They have responded best to fresh herbs, such as fresh parsley, coriander and catnip, which they rub in and chew on. They have also shown much interest in colognes sprayed on objects, which they rub against and then mark with their anal glands. Scented items should only be given in open, airy areas to provide adequate ventilation.

- Moving Animals Between Enclosures
  The meerkats can be moved into a foreign or lesser-known enclosure. It is important that the enclosure has a fenced roof to prevent escape and that the meerkats are constantly supervised. If this is not possible the animals should be walked on lead and collar. Intense sniffing, investigating and digging may be observed. We take our meerkats into our caracal’s enclosure while she’s out on a walk on a regular basis and they enjoy the larger space to explore and forage in.

- Moving Objects between Enclosures
  Some of the exhibits can be moved from one enclosure to another, such as small crates and boxes. The health status of all animals should always be known. Objects should never be moved from a sick or compromised animal to the enclosure of a healthy animal.

Novel Objects

Meerkats are naturally inquisitive animals so any novel objects that encourage them to search, sniff and scent-mark, dig or probe with their long claws or attack like prey
provides good enrichment. Novel objects are a good way of hiding food and encouraging foraging behaviours as well as bringing out hunting instincts.

Never leave any toys unsupervised with the animals.

- **Soft Toys**
  Our meerkats, especially when young, enjoy playing with soft toys, attacking them like prey: grabbing, shaking, biting and kicking. Any play with soft toys should be closely monitored to make sure they don’t ingest any pieces from the toys.

- **Papier-mâché Ball**
  Balls with holes in them arouse the curiosity of meerkats and encourage them to probe inside. Dry cat food in a papier-mâché ball makes a rattling noise and attracts their attention. The meerkats at Cheetah Outreach will spend much time sticking paws inside the ball and retrieving pieces of dry cat food.
Cardboard Boxes
Since meerkats are burrowing animals, they enjoy entering small concealed spaces. The meerkats at Cheetah Outreach love exploring boxes and sometimes playing in them.

Plastic Balls in Splash Pool
Hiding food gets our meerkats to spend time searching for it as they would in the wild. A different way of hiding food is to fill a splash pool with lightweight plastic balls and hide treats such as blueberries or other food items underneath. The meerkats have much fun tunneling through the balls looking for the treats.

Exercise
Exercise is essential and is a part of husbandry that cannot be compromised on. Not only does the activity help to maintain a healthy physical condition, but it also provides excellent mental stimulation. Exercise can be provided by the following means:

Play
Play is an important part of social interaction and the meerkats at Cheetah Outreach spend a lot of time playing with each other. Play also promotes activity and provides good exercise.
Walks
Walks can provide the handler with many opportunities to enrich a meerkat’s life. New and different environments can provide a variety of smells and sights to investigate. Not only do walks provide exercise to the meerkats but they give them great opportunities to forage for food as they would in the wild. During walks, handlers often turn logs and rocks over to encourage digging. The meerkats at Cheetah Outreach also display anti-predator behaviour during walks, stopping every few minutes to sit upright on hind legs to scan the skies and surrounding area for any signs of danger.

Social interaction/Tactile
Meerkats are among the most social animals on Earth so social interaction, especially with other meerkats, is essential to their well-being.
 Interaction with Staff/Volunteers
For animals kept in captivity and thus exposed to people, it is to their benefit to view humans positively. This greatly minimizes one of the main stresses in captivity. Both meerkats at Cheetah Outreach have been raised by people and are imprinted on humans so require attention and interaction from handlers on a daily basis.

 Interaction with Other Meerkats
Since meerkats in the wild live in groups of 2 to 50 members, having the companionship of their own species is essential for their well-being in captivity.

Grooming and playing with each other strengthens social bonds. Sparring and play-fighting allows young meerkats to practice skills and adults to establish dominance in the pack. The meerkats at Cheetah Outreach often engage in play-fighting, grappling and wrestling with each other.
Interaction with Other Animals

Seeing, smelling and interacting with other animals through a fence or at a distance can greatly enrich a captive meerkat’s life. When encountering larger predators, the meerkats may show threat displays or even engage in mock attacks.

This should be a positive experience for the animals and not lead to anxiety. Care should be taken to assess the demeanor and behaviour of all animals carefully.

Interaction with the Public

At Cheetah Outreach, only our male meerkat takes part in encounters with the public when he’s in the mood to meet people. He enjoys the attention and will sometimes climb into a guest’s arms to be cuddled. Both meerkats also have much interaction with tour groups and visitors through the fence of their enclosure. Occasionally they will meet visitors on walks under the supervision of their handlers.
Behavioral Conditioning

Behavioral conditioning is very important since it provides mental stimulation and challenges cognitive skills. It also strengthens the bond between care-taker and animal. The level of conditioning depends on the individual and might be one or all of the following:

- **Harness and Lead Training**
  Training to walk on a lead begins at an early age in order for young animals to get accustomed to the restricted feeling of harness and lead. Lead walking is important for all ambassador animals. With the meerkats at Cheetah Outreach, it allows them to go on walks and explore and forage in different areas of the facility as well as be moved to different enclosures for a while.
- **Target Training**
  This type of training is used to shape behavior by means of positive reinforcement. Verbal commands, hand signals and/or a clicker may be used to encourage the meerkat to perform different behaviours such as touching, sitting or standing up and going through a tunnel.