



Animal Well-being

Exotic Feline Enrichment

Tips For Keeping Captive Cats

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With more exotic cats in captivity than in the wild, it is more important than ever to provide for their welfare. Animal welfare refers to an animal's ability to cope with its environment and living conditions. Living conditions of captive felids vary greatly; whether at a zoo, rescue, or sanctuary, enrichment is necessary to keep these frisky felines content and healthy. The purpose of this publication is to provide background information about felids, define and identify common stereotypic behaviors of captive felids, and discuss various forms of enrichment that can be used to help care for the welfare of captive felids.

Cats in the Wild

Exotic cats can be found across the world in jungles, savannas, and rainforests. The tiger (*Panthera tigris*) is Asia's largest apex predator and can also be found in parts of India and Russia (Dinerstein et al., 2007). The African lion (*Panthera leo leo*) is known as "the king of the jungle" across Africa; despite this title, lions primarily live in savanna and scrub habitats. Leopards (*Panthera pardus*) naturally live in both of these ranges, spanning across parts of Africa and Asia. The most common wild cats in the United States include the mountain lion (*Puma concolor*) and the bobcat (*Lynx rufus*).

There are 36 species of carnivorous cats that live all over the world, and they have one thing in common – wild cats have large home ranges (Miller and Fowler, 2015). The natural home range for an African lion is approximately 10-14 square miles (Tuqa et al., 2014). In the wild, cats spend a large portion of their day roaming their territory in search of food. In a captive setting, however, they often don't have enough space to perform these daily activities, and food is readily available. It is impossible for many places, such as zoos and sanctuaries, to provide an area of this size for their captive felids. Some research has shown that when housed in captivity (Clubb and Mason, 2007), animals with large home ranges are more likely to develop an abnormal behavior called a stereotypy.

Key Word	Definition
Home range	The area in which an animal, in its native habitat, regularly travels looking for food sources or potential mates.
Stereotypic behavior/ stereotypies	An abnormal, repetitive behavior that is induced by frustration, repeated attempts to cope with the environment, and/or dysfunction of the central nervous system.
Oral stereotypies	A stereotypic behavior involving the mouth.
Locomotor stereotypies	A stereotypic behavior involving motion and movement.
Enrichment	Anything that enhances an environment, making it more complex and that provides an outlet for species specific behavior
Animal welfare	The state of an animal in relation to its ability to cope with its environment; the animal's quality of life

What are stereotypies?

Stereotypic behaviors, also known as stereotypies, are abnormal, repetitive and unvarying behaviors that appear to have no function (Mason and Rushen, 2008). These typically develop when animals are not able to express highly motivated behaviors. If these behaviors become established, animals may also

have a dysfunction in the same area of the brain as humans with psychiatric disorders such as obsessive compulsive disorder (OCD) and schizophrenia (Garner et al., 2006). Stereotypic behaviors in animals fall into several categories, two of which are commonly seen in captive felids: oral and locomotor stereotypies. As their names suggest, oral stereotypies involve repetitive movements with the mouth; locomotor stereotypies involve movement. These behaviors may be a result of an inadequate environment and (Mason and Rushen, 2008) are often seen under conditions that:

- Lack stimulation or critical resources
- Impose social isolation for social species
- Are restrictive
- Induce fear or frustration

While stereotypic behaviors are often found in poor environments, behaviors differ between individuals, species and contexts. Because of this, it is hard to understand the effects of stereotypies on animal welfare. The expression of stereotypies is not always an indicator that an individual's current environment is poor or lacking. Stereotypic behaviors may persist in individuals that were previously kept in poor conditions, so even though an animal is currently displaying stereotypic behavior, this does not mean the animal is currently in a poor state of welfare (Mason and Rushen, 2008). It is often referred to as a "behavioral scar".

Identifying Stereotypies

Common stereotypic behaviors have been identified in felids (Wooster, 1997). These behaviors include:

- Pacing – moving back and forth in a consistent pattern
- Head twisting and bobbing – tilting head side to side or bobbing in a repetitive pattern

Other abnormal behaviors that occur in felids include:

- Excessive grooming – licking the body more frequently than normal, sometimes resulting in fur discoloration or loss
- Toe and tail sucking – placing the tip of the tail or toes in the mouth for a prolonged period of time
- Fur plucking – removal of fur by the mouth, often resulting in patches of hair loss



Environmental Enrichment

Two important criteria are associated with environmental enrichment: 1) the enrichment must be meaningful to the animal; and 2) the enrichment must improve the complexity of the environment, not just change it (Newberry, 1995). The Association of Zoos and Aquariums (AZA) defines environmental enrichment as a “dynamic process for enhancing animal environments within the context of the animals’ behavioral biology and natural history.”

One method for applying and assessing enrichment is referred to as the SPIDER method. This method consists of Setting goals, Planning, Implementing, Documenting, Evaluating, and Readjusting (Mellen and MacPhee, 2001). By using this technique, it is possible to identify goals for enrichment and assess the enrichment’s efficacy. Among the many goals and purposes for using environmental enrichment (Young, 2003) are to:

- Increase diversity of behaviors
- Increase the range of normal behaviors
- Increase positive environmental utilization
- Increase the ability to cope with challenges
- Reduce abnormal behaviors

An enriched environment is easier for animals to cope with and often reduces stress in exotic felines (Philips et al., 2017). Provided with a more complex and engaging environment, animals have opportunities to perform some of their natural instincts and behaviors.

Types of Enrichment

Feeding Methods

Felids are known for their strategic hunting abilities. While it might be easy for keepers to place processed (cleaned, butchered) food in the same spot every day, it does not provide much stimulation for the animals. Food-based enrichment allows cats to channel their natural hunting instincts. There are many ways to provide food-based enrichment. Rather than boneless cuts of meat, use whole or partial carcasses or other food items that include bone. Presented with a carcass, cats have the opportunity to practice some aspects of their natural hunting behaviors, including the removal of fur or feathers (Szokalska et al., 2012). All of these behaviors are naturally displayed in the wild leading up to and during feeding. Giving captive animals opportunities to display these behaviors can improve their overall welfare.



Another suggestion includes regularly rotating where and when food is placed. As a keeper, it is easy to get into the habit of leaving food in the same place. This routine might be easy for the keeper but can become very unstimulating for the cats. They no longer have to work to find their food, suppressing their natural hunting instincts. By placing their food in different locations or offering food at different times, cats have an opportunity to actively search for their food. This in particular may be helpful in reducing the motivations that lead to the development of pacing stereotypies.

Puzzle feeders are a very common form of enrichment across different species of animals. Puzzle feeders need to withstand being tossed around by a lion, but they can serve as a great form of enrichment. One option to consider is to place food in a cardboard box (Szokalski et al., 2012). Another option is to cut holes into various items, such as barrels, and place food inside.

Olfactory Methods

Olfactory-inspired enrichment has been found to enhance the environment for many species, ranging from captive African lions (Powell, 1995) to the smaller black-footed cat (Wells and Egli, 2004). One method of olfactory enrichment for cats is spreading different scents throughout the animal's enclosure. This can include catnip, cooking spices, and even perfumes and colognes, or urine from prey species. The new scents mentally stimulate the animal and can even promote natural scent marking behaviors. Beware that essential oils should not be used for this purpose, as they can cause adverse reactions in cats (Genovese et al., 2012).

Toys

Toys keep animals active while providing mental stimulation and promoting species-typical behavior, such as pouncing, hunting, and chasing. For small cats, a simple tennis ball can serve as a form of enrichment. For larger cats, something sturdier is necessary. Boomer Ball (Grayslake, Illinois, USA) is a company that specializes in producing large plastic balls specifically for enriching animals. Though they are not indestructible, the balls are made of sturdy plastic



that can withstand years of heavy use. Large plastic barrels can serve the same purpose. Both of these sources of enrichment promote many natural hunting behaviors and improve an individual's physical condition. Artificial prey toys have proven successful. The San Francisco Zoo introduced artificial prey to their resident servals by passing a fake, stuffed rodent through a clear plastic tube, supported by a stump on either end. They encouraged the servals to search for the artificial rodent by playing prey sounds near the stumps, where the rodent would enter and exit the tube. The zoo found that the artificial prey toy encouraged a wide range of behaviors, including pouncing, chasing, and foraging (Markowitz and LaForse, 1987). While the design of the artificial prey toy is simple, the outcome includes a dynamic range of big-cat behaviors.

Enclosure Enhancements

The purpose of providing enrichments is to enhance the environment of an animal. Environmental enhancements can serve as an excellent form of enrichment. By manipulating an animal's enclosure, resources and opportunities similar to what might be experienced in the wild can be provided. Examples include opportunities for scratching, hiding, marking, and regulating their body temperature by seeking out cooler or warmer areas.

We know that house cats spend plenty of time on cat towers and shelves, where they can be up high and take in their surroundings. This behavior is naturally found in wild cats as well. Leopards in the wild commonly use trees for resting and as a spot to hide their captured prey from other predators (Prater, 1971). Providing a vertical structure allows cats to practice natural behaviors while providing additional space and a new angle from which to view their territory.



Contrary to popular belief, not all cats despise water. When provided a water source, many cats will take advantage of the opportunity to go for a swim. These water sources can come in the form of concrete pools, ponds, and even large water troughs. Not only is it a great way to cool off on a hot day, but swimming is a form of exercise that puts very little stress on joints.

Conclusion

Scientific research has demonstrated that enrichment can reduce stereotypic behaviors by 50-60% in some species, including carnivores and primates (Quirke et al., 2012). Many zoological institutions recommend that enrichment should be an essential part of a zoo's everyday routine. To best provide for the animals without infringing on the time of keepers and staff, it is important to ensure that there is a good variety, quantity, and frequency of effective enrichment items available for implementation (Hoy et al., 2010). Enrichment provides many benefits to captive animals, and it can benefit zoos, too. Enriching the environment of the felids encourages natural behaviors that exist beyond the normal baseline behaviors typically seen, providing excitement for visitors and guests (Markowitz and Laforse, 1987).

More Information

For more information on environmental enrichment, visit:

<https://bigcatrescue.org/enrichment/>

<http://www.cheetah.co.za/pdf/Cheetah%20Enrichment%20Document.pdf>

<https://www.wildcatsanctuary.org/tws-animal-enrichment-program/>

<http://crownridgetigers.com/enrichment>

<http://www.bigcat.org/environmental>

<http://www.animalenrichment.org/spider>

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