

Bringing Out the WILD Side

Enrichment Encourages Animal Behaviors

In HAMILL FAMILY WILD ENCOUNTERS, a panel in the side of a tree does something sudden and unexpected: it slides open to offer a food treat that is retrieved by a red panda. Later, the panel slides open again—and nothing is there.

That device is something called “enrichment,” and it is the end product of a *lot* of time, effort, expertise, and collaboration.

According to the Association of Zoos and Aquariums, the accrediting body for over 210 major animal-holding institutions in North America, enrichment is “a dynamic process for enhancing animal environments within the context of the animals’ behavioral biology and natural history.” In other words, enrichment is a method for providing animals with opportunities to engage in behaviors that are natural for them and that they are motivated to perform. That definition is very much a simplification.

Like all Brookfield Zoo exhibits, HAMILL FAMILY WILD ENCOUNTERS promotes natural behaviors for the health of the animals.

Enrichment continued

Enrichment is much more than just eliciting a behavior. It is a philosophy on how animal management is approached by an institution. At the same time, it is also an ethical responsibility. At Brookfield Zoo, that means providing the animals with the resources and the ability to choose to do what they would normally do in the wild. Such choices provide measurable physical, mental, and emotional benefits.

In the broadest sense, enrichment is a management tool, along with proper nutrition, top-notch medical care, and a healthy living environment. More specifically, enrichment falls into several categories: objects that animals can handle and manipulate, interesting foods offered at random times, sensory stimulation, dynamic habitats with varying spaces and substrates, and appropriate social groupings.

A Satisfyingly Unpredictable Life

These strategies are designed to mimic some of the conditions that animals may face in the wild. To many people, the wild is an idyllic place where animals roam free without a care in the world. The reality is that life in the wild is filled with dangerous challenges, from predation to poaching to climate change and habitat loss. Researchers who study animals quickly learn that animals want to work for a living. (Scientists call this idea “contrafreeloading.”) Each day, animals work by performing life-saving activities such as finding food and shelter, escaping predators, and being social with each other in a functional hierarchy.

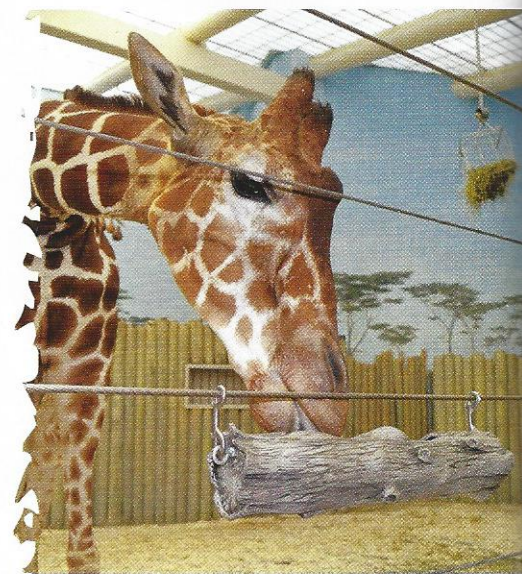
These activities occur with a level of uncertainty that creates “adventure” in animals’ lives. Enrichment helps replicate some of this uncertainty while promoting dynamic social systems. It also occupies their time with healthy challenges, adding

a welcome randomness and reducing behaviors that are repetitive or routine.

At Brookfield Zoo, enrichment looks like many different things: deer carcasses provided for the wolves, dark pool floors that help crocodiles feel more secure when they recede into the water, random scents spread throughout habitats. What it *doesn't* look like is anything unnatural. You won't see those large, brown, plastic balls in any habitat here at the zoo. In 2010, with generous support from the Kainz Family Foundation, the Animal Programs Department began exchanging plastic balls and bright, fluorescent road cones for naturalistic enrichment devices that elicit specific behaviors by the animals and lead to greater enjoyment for both animals and guests.

Another facet of enrichment at Brookfield Zoo is less noticeable. While many zoos have enrichment programs based on providing only toys, we are becoming known for specializing in what we call “automatic feeders.” Auto feeders are hidden mechanical devices that deliver food items at random times

The gorillas use a “forage board” to acquire food from inside deep holes and crevices. This enrichment item increases foraging time by challenging them to use their fingers, tongues, and even sticks.



A giraffe uses its tongue to move obstacles out of the way to retrieve food. In the same way, giraffes in the wild get leaves from between thorns on an acacia tree.

throughout the day, much like animals would experience finding food in the wild. This randomness helps keep the animals engaged in their environment by enforcing their natural need to seek food. The cubbyholes in the red pandas’ tree are one example, as is a conveyor belt that is programmed to arbitrarily drop cardboard tubes containing treats into the gorillas’ habitat in TROPIC WORLD. Near the gorillas, where our other African primates live, new auto feeders disguised as realistic wasp nests release treats at odd times throughout the day. (You can see one of these wasp nests on the cover of this *Gateways*.)

Auto feeders have another advantage by allowing food to be available more than just between 9:00 a.m. and 5:00 p.m. With these devices, we can provide food throughout a 24-hour period, which is important for many species. Animals in the wild don't forage for food in a 9:00 to 5:00 scenario, and neither should animals in a zoo or aquarium setting. The care of our animals does not end when staff go home. It is a 24-hour responsibility.

Team Spirit

It would be a pretty strong guess that the animal care staff, who know the animals well, help determine what types of enrichment work best. Their input is vital, of course, but as it turns out, it takes a village to care for animals' needs. Another way we're industry authorities in this aspect of animal care is through our holistic approach to animal welfare. What's notable here at Brookfield Zoo is that many different types of staff members with a wide array of expertise are examining the issue of welfare and enrichment—and they're doing it together, each layering on experience and knowledge so that every husbandry plan, including enrichment, goes through a gauntlet of opinion and continuous development.

Animal care staff know the animals' usual behaviors and utilize enrichment to promote these behaviors. A nutritionist examines the dietary value of any food offered to the animals. A veterinarian determines that animals are fit and healthy. Curators know which habits and habitats are appropriate to emulate. An animal welfare specialist measures the indicators of whether a particular type of enrichment is working. A specialist on environmental quality ensures that the animals' zoo habitats are just right—another form of enrichment. Other specialists on staff do nothing but design and test new forms of enrichment. Exhibit designers offer up their own extensive expertise. Even electricians help out, providing the electricity that powers the auto feeders.

Despite their various duties, each of these people has one thing in common with the rest: they all talk to each other for the best welfare of the animals, with each weighing in on the best practices.

So everyone works together. But there's one surprise component that resides outside of the zoo...and it's you! Believe it or not, your opinion on our animal care initiatives matters because a perceived positive state of animal welfare by our guests means we're doing something right. Another benefit is that you pass along glowing comments about how content the animals seem here, which leads to others visiting, which means more support for... you guessed it...animal enrichment efforts. We care about your opinion, and we don't leave that to chance. We're out in the park during the summer, inquiring about what you think of our animals' living conditions.

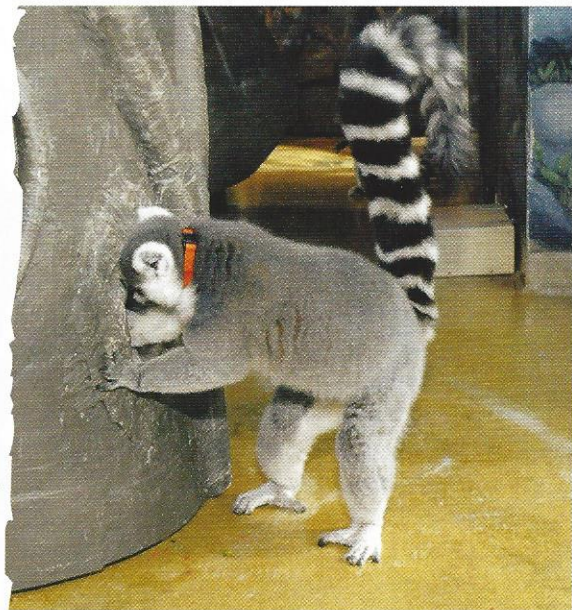
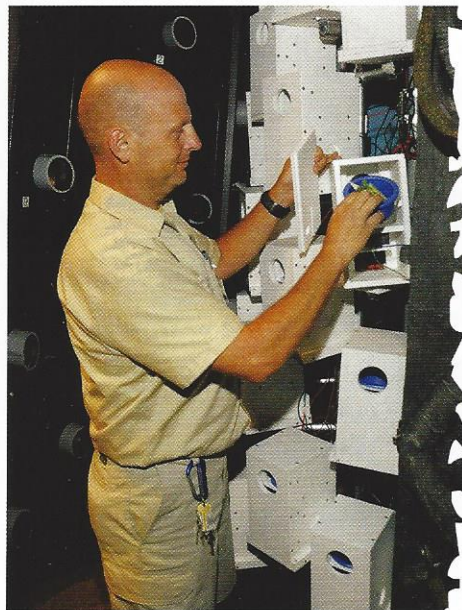
Heavy-Duty Expertise

How do we know we're doing this whole enrichment thing in the correct way? That's a very important question, and at the Chicago Zoological Society, we're at the forefront of figuring that out, for both ourselves and for other zoos. A dedicated research department here—featuring not

just behaviorists, welfare specialists, and endocrinologists but also interns and postdoctoral researchers—is backing up our ideas on enrichment with solid science.

As with all good science, the research is rigorous. If we don't have extensive knowledge of a species based on research conducted in the wild, we examine the natural habitats of closely related species to extrapolate the best practices in animal welfare. We measure the reproductive health and general health of animals to ensure maximal care.

Very few zoos monitor the adrenal system of animals—but we do. This system in an animal's body is responsible for regulating its reaction to danger (in other words, stress) and, conversely, its ability to rest and be calm. In addition, we are working out methods to examine autonomic nervous system activity. Hormones that are part of this system give us very strong signs of positive states, offering us a guidebook on what factors lead to optimal welfare.



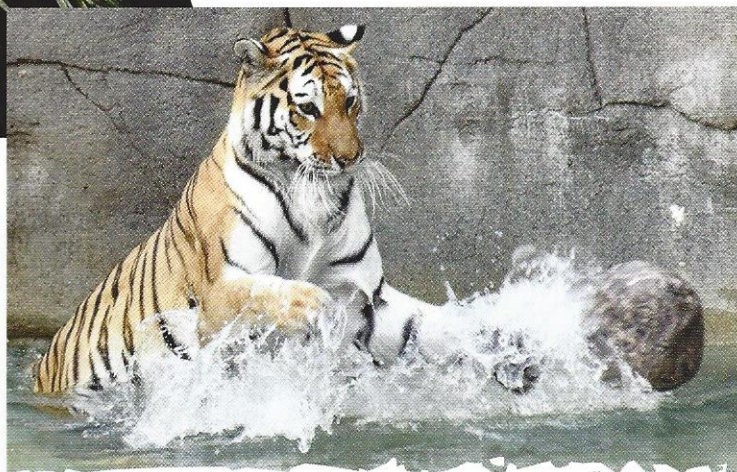
An animal care specialist loads an automatic feeder with food that will become available to the lemurs sometime later in the day.



Above: Meerkats engage a spinning puzzle feeder that tasks them with using their minds and skills.

Left: A browse feeder is loaded with the same challenges as animals encounter in the wild.

Below: A tiger chases a naturalistic device that was designed and fabricated at Brookfield Zoo.



We practice “biobanking,” non-invasively taking samples of bodily materials from many species to analyze them for hormones that offer up what is probably the best indicator of the state of an animal in various situations—for example, at rest, interacting with other animals, or even interacting with animal care staff. In the old days, we looked at which conditions caused an animal to release the hormones that signify stress. These days, we’re also tracking the hormones that accompany something like satisfaction so we know what we’re doing right. It’s amazing that saliva from a polar bear can tell us quite a lot!

Communication is important, and we are spreading our knowledge to animal care specialists in other zoos and

aquariums. Because we are on the cutting edge of this area of research, we have held conferences on animal welfare, including enrichment, and we are planning more as new techniques become available.

Yet we’re still asking questions that can be tricky to answer. For any given individual animal, what quality of care is good enough? Where does that quality fall in the scale from poor to thriving or from the animal experiencing boredom

to being overly and unnecessarily vigilant because of the enrichment we are offering? We’re looking for those answers. We hope to determine the perfect formula, but in the meantime, we keep adjusting our methods and doing more research.

The most important thing to remember is that we are still continuously working to improve the well-being and quality of the lives of the animals in our care. That effort is something we take very seriously. ■