THE SHAPE OF ENRICHMENT is dedicated to sharing ideas, inspirations, and practical knowledge of enrichment strategies among those working in the field of animal care. It is an open forum for keepers, trainers, curators, researchers, exhibit designers, administrators, volunteers, and anyone else interested in approaches to captive enrichment. All of our staff are volunteers.

We are always looking for new submissions, from feature-length articles to short blurbs. We accept submissions in any form, polished or not. Let us, and your colleagues, hear from you!

THE SHAPE OF ENRICHMENT presents enrichment ideas of all kinds from a variety of sources. We urge you to consider, assess, and evaluate any idea carefully before applying it to your own animals and exhibits. If you have concerns or opposing views, we will be happy to accept letters and articles that express them—our purpose is to establish an ongoing dialogue. As the editors, we present these ideas for your consideration only; we do not take responsibility for their effectiveness or feasibility.

THE SHAPE OF ENRICHMENT, ISSN 1088-8152, is published quarterly by the non-profit The Shape of Enrichment, Inc. Subscriptions are $15 per calendar year, payable in U.S. funds only, drawn on a U.S. bank. The $15 fee includes postage, both domestic and foreign air mail. Mid-year subscriptions are prorated. Back issues are available for $3 each. Send all subscription requests, article submissions, letters, comments, and questions to 1650 Minden Dr., San Diego, CA 92111-7124. Phone: (858)279-4273. E-mail: shape@enrichment.org.

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Autumn Leaves

Here in South Africa, we are well into fall and autumn leaves are dropping in their millions onto the park areas, pathways, and roads. Our horticultural team collects about 500 trashcan bags of leaves each week for the duration of the three-month fall period. We do not let these leaves go to waste. They are all sorted to remove any rubbish, and then used in animal enclosures. Our boars and hogs spend hours rooting through piles of oak leaves snuffling out acorns, while our group of orphaned chimpanzee youngsters love playing in the piles of leaves in which we hide their food. Leaves can be used for virtually any species. Our carnivores get leaf stashes for them to play with or offered as an alternative to the usual bedding material. Bear and baboon mulch pits contain a mixture of leaves and wood chips with food hidden in them, and are ideal for adding quick, challenging scatter feeds to the enclosure. Even our Nile hippos and white rhinos cannot resist a snuffle in the piles of leaves that we place in their enclosures. What is also great about leaves is that they are completely naturalistic, and in many enclosures they don't have to be cleaned up—at some stage they break down and add compost to the enclosure. (This also scores points with the horticulture team.) Leaf collection probably occurs in your zoo anyway, and with some coordination it is easy and fun to enrich your animals with the supply. Two things to remember though: check for any rubbish that may have snuck into the leaf piles, and make sure that the leaves you are using come from non-toxic plants, and plants that are appropriate for the species—acorns, for instance, are fine for hogs, but not for all animals. Happy enriching.

—Mathew van Lierop, Enrichment Coordinator, Johannesburg Zoo, South Africa.

THE SHAPE OF ENRICHMENT

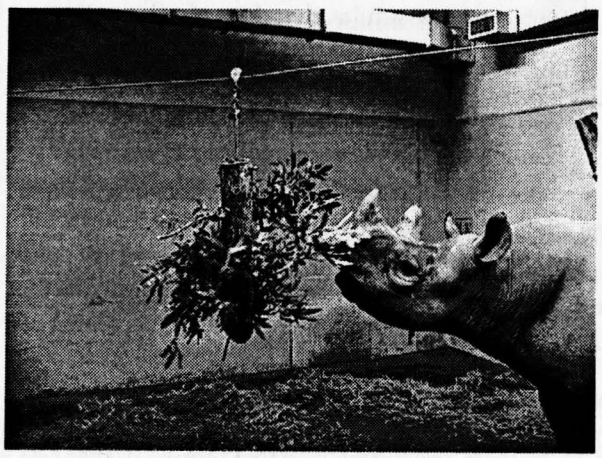
Contents: Volume 11, No. 2 May 2002

Adding Zip to Rhino Enrichment

By Todd Maki, Keeper II, Zoo Atlanta, Georgia

The mission of the Behavioral Husbandry Committee at Zoo Atlanta is to develop and sustain a zoo-wide program of daily enrichment for all animals in the collection. We believe that to create a more complete enrichment program we must provide not only physical but also mental challenges for our animals to solve. This belief led to the use of a new technique in our rhino enrichment program. It began as an effort to simply increase feeding duration, and evolved into an attempt to challenge both the physical and intellectual abilities of our pair of black rhinos.

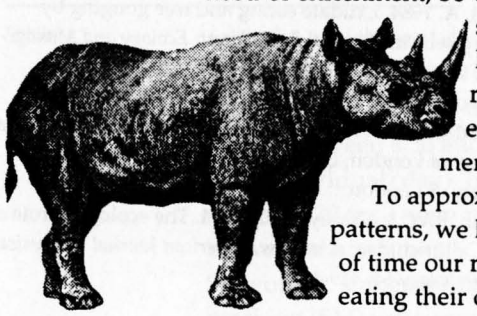
Todd Maki



One of the black rhinos investigates browse on the Zip Line.

Like most captive animals, rhinos in zoos are often restricted in the time or energy used searching for food, compared to being in the wild. Wild rhinos typically range across large areas in order to find the appropriate types of browse and the quantity needed, while captive rhinos are usually provided with easy access to a nutritionally balanced diet, removing the need to forage. Without the activity required for natural foraging, rhinos may develop problems with obesity or abnormal behavior.

Our black rhinos are housed individually in a 380-square-foot, indoor holding area at night, and do not have physical access to each other. In winter they may remain inside even during the day, when low temperatures prohibit their access to the outdoor enclosure. This setting is much in need of enrichment, be-cause it provides few sources of stimulation and little opportunity for the rhinos to interact with each other or their environment.



To approximate natural activity patterns, we had to increase the length of time our rhinos spent obtaining and eating their diet. With this goal in mind, we developed a method of prohibiting easy access to the most desirable food items. We collected five-gallon plastic buckets with lids and drilled two-inch holes in the top and sides. We placed produce or grain in these buckets to create a simple puzzle feeder. To encourage the rhinos to use these feeders, we initially made the solution very easy by drilling many holes and put food both inside and on top of the buckets. We started by placing the buckets on the floor along with their normal evening hay and grain. The visibility of the food on top gave the rhinos the incentive to investigate these new strange items. By taking the visible food off the exterior of the buckets, they would eventually touch the buckets, causing them to roll. The food inside would then fall out through the holes in the sides. This resulted in a simple learned behavior that allowed us to create more complex puzzles. Adding hay to the buckets prevented the food from easily falling out of the holes. Even with the added difficulty, the rhinos very quickly figured out an easy way to get the reward by smashing the buckets against the wall. When smashed, the lids popped off and the rhinos could easily eat the food inside. To create a greater challenge, we had to prevent the rhinos from removing the lids.

Suspending the buckets from a pulley and quick-clip that ran along a horizontal cable was a perfect solution. The elevation of the buckets prevented the rhinos from using their strength and weight to pop off the lids, as well as allowing the buckets to move more freely. Because the buckets slid along the cable, this prevented them from swinging back and causing any physical injuries to the rhinos. This feature became even more important when new enrichment devices were created and they became heavier. We named this horizontal cable system the Zip Line.

To construct the Zip Line, a 29-foot, 3/8-inch, vinyl-coated steel cable was hung diagonally across the indoor stalls, 8 feet off the ground. All four corners of the stalls have a steel ring anchored into the wall. Luckily, the rings were already installed with the initial construction of the building. To begin, one end of the cable passes through one of the rings. The cable is then looped back and secured to itself with a 3/8-inch cable clamp. A 1/4-inch swivel hook with a safety clasp attached to a 3/8-inch block and pulley is slid

onto the other end of the cable. The loose end of the cable is then looped through a 3/8-inch turnbuckle and clamped the same way as described through the ring. The turn-buckle is then attached to another ring in the opposite diagonal corner of the stall by using a 3/8-inch quick link. The turnbuckle is then twisted until the cable is tight. If the cable has any slack, the hanging devices will tend to roll to its center. This set-up took about 30 minutes and the cost would have been under $50, but our maintenance department already had all of the materials on hand.

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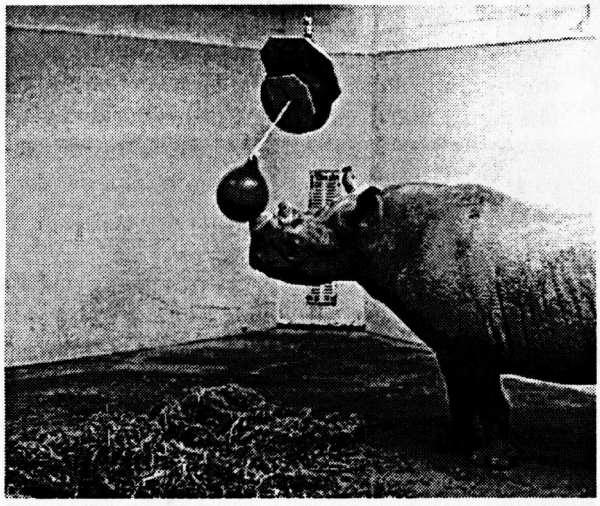

Interacting with a device made from a bowl and a stall ball hung on the Zip Line.

The new concept of suspended buckets was a little exciting for our male, but our female was more hesitant. We slid the buckets to the far back corners of the stalls the first night, so as not to spook them too much when they first came in. When the male saw it hanging there, he instantly charged the bucket. By tossing up his head, he hit the bucket with his horns. The fruit that was placed inside and on top of the bucket went everywhere. When he saw this, he instantly stopped and started searching the floor for all of the now randomly distributed treats. The female, after circling and some very concentrated sniffing, got close enough to bump the bucket, which caused the fruit that was loosely placed on top to fall off. She also quickly reacted to finding the fallen treats. By morning, both buckets were very dirty, and empty.

The rhinos continue to use these devices as we randomly set them up throughout the week. Now, they both tend to use a head popping technique in which they walk underneath the bucket, and with their heads, come under the buckets and hit them with their horns. We do not know exactly how much time they actually interact with the buckets, but they are usually the first things investigated when the rhinos come in. There are also times when we have made the feeders more difficult, again by adding hay, or cutting fewer holes, and on occasion there is still food in them in the morning. Sometimes we even hear the sound of the buckets or the pulleys in the morning while we are cleaning, before the rhinos go out for the day. Unfortunately, we have noticed that once the food is gone, they tend to lose interest in the buckets.

We have also expanded this technique to use outside in their exhibit. Gunite walls, steel fencing, cables, and a water moat border our 16,000-square-foot enclosure. Between two of the trees located near the back corner of the exhibit, we have stretched another Zip Line 10 feet off the ground. The only difference is that we wrapped the cable around the trunk of the trees for support. The cable is hidden high in the branches, and cannot be detected by the zoo visitors unless one of the enrichment devices is hanging from it. This Zip Line is used to suspend more naturalistic enrichment like browse, sticks, or logs. We have drilled 2 to 3 inch holes through the logs, and by placing large leafy branches into them, it becomes a natural-looking browse feeder. With these types of devices the rhinos pull, rub, and sometimes even hit the logs and sticks, which cause them to swing back and forth or move up and down the Zip Line. This is to encourage the rhinos to be active, visible, and engage in more naturalistic behaviors.

Our collection of food enrichment devices designed to be used on the Zip Line has also grown. A large Boomer Ball® with holes, a rubbing log, a plastic 50-gallon drum, Rubermaid® trash cans with fruit, hay, or grain inside (no lids) are also rotated randomly throughout the week. One of our favorite "toys" is a hanging rubber bowl with a stall ball attached to a rope, which runs through the center of the bowl and then hooks to the pulley on the Zip Line. The rhino has to hit the stall ball, which makes the bowl start to tip back and forth, spilling the fruit out onto the floor. Most often they tend to hit the stall ball from underneath, sending the ball up under the bowl and causing a chain reaction to send the fruit flying. They have gotten so good at this that we have added a piece of plywood the diameter of the bowl to the rope a few inches above the bowl, so that some of the fruit hits the board and falls back into the bowl instead of all over the floor on the first try.

The Zip Line has given us the ability to be even more creative with our limited resources, and the variety of enrichment devices has given our rhinos more opportunities to be more active physically and mentally in their captive environment. ✧