
Lion-Tamarin and Marmoset Enrichment at the National Zoo

The Department of Zoological Research at the National Zoo in Washington, DC houses three pairs of lion- tamarin monkeys (*Leontopithecus rosalia rosalia* and *L.R.chrysomelia*) and one pair of marmosets (*Callimico goeldii*). The animals are all exposed to a variety of enrichment stimuli as part of our in- house program. The following are some of the techniques we use, all of which center around the theme of food manipulation.

- Bug-o-matic. Our most commonly used enrichment tool is 2-in.-wide PVC pipe. The pipe is cut into 1- ft. sections, the ends capped with threaded plugs that can be easily removed for cleaning, and holes (1/2-in.- 1 1/2-in.) are drilled with random spacing along the sides. Pipes with small holes (too small for the animal to insert his or her hand) require the animal to roll or shake it to obtain the food item inside. We will put chilled crickets or mealworms in these small pipes because the smaller holes reduce the rate at which the insects emerge. Pipes with larger holes are cut so that once the animal grabs a piece of food it will not wedge its hand while extracting it. To complicate the extraction, the pipe is filled with shavings or newspaper shavings (hay and stiff grass have caused cuts and have been run up under finger nails like some macabre torture method). For animals who are leery of putting their hands or arms into non-see-through objects, we have used clear PVC pipe.
- Soda bottles. A really inexpensive alternative to PVC pipe is clear plastic 1- or 2-liter water bottles (Evian, Quibel, etc.). Holes in the two sides must be drilled and not punched. Punched holes leave very sharp inverted plastic edges that can trap the animal's hand upon extraction.
- Cardboard boxes. Frequently we use cereal or regular boxes of any size. The box is filled with hay, shavings or newspaper and food is mixed in. Most of the monkeys attack this device as a team, where one will get in the box and dig around while the others wait patiently below for fall-out.
- Hanging food baskets. A wire cradle was fabricated so a standard 10-in. by 10-in. food pan could be inserted and secured. The cradle is attached to a short length of heavy duty (10 AWG) electrical wire with a snap-lock fastener at the end. The food pan is filled with the normal diet and hung in various places throughout the exhibit. The location is varied daily and challenges/requires the animal to climb, jump, hang, or swing to get to the basket.

As always, the key to successful enrichment is variety. Use a different device each day. Load it with different foods each time. Sometimes don't load it with anything at all! (It keeps them guessing.) Before you start, get a quantitative idea of how your animal spatially and temporally partitions its enclosure. Your goal should be to expand both to every possible limit.

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