

Environmental Enrichment

Part of a keeper's duty involves enhancing the lives of the animals in the collection. The key to enrichment revolves around the idea of providing the animals a new experience in order to bring out the natural behaviors of the animal.

There are some points to consider when embarking on an enrichment plan:

- ◆ Is it safe for the animal?
 - Is the plant toxic? (Consult approved browse list)
 - Can the animal become caught or tangled?
 - Does it pose a choking hazard?
 - Is the enrichment likely to cause a flight response that may result in injury to the animal?
- ◆ Does the enrichment fall within budget constraints?
- ◆ How much time does it take to prepare, offer, observe and clean up the enrichment?
- ◆ What behavior are you trying to illicit with the enrichment?
- ◆ Has this enrichment been approved by the Vets, Zoological Manager and Curator?

Once you've taken these things into consideration there are still numerous ways to accomplish the task, yet they all fall into one of 2 categories: 1. Non-food Enrichment 2. Food Enrichment.

Non-food Enrichment

Non-food Enrichment is altering a non-food portion of animal's surroundings in order to illicit a natural behavior. Some of these behaviors include: browsing, foraging, play, increased activity, and enhanced use of senses. Some examples of non-food enrichment are:

- ◆ Logs/branches for pushing/pulling and chewing.
- ◆ "Toys": boomer balls, traffic cones, sprinklers, raw hide, wooden steps- often used to stimulate play and increased activity.
- ◆ Spices: Sprinkled on trees or logs to provide olfactory stimulation.
- ◆ Change substrate: mulch, sand, grass.
- ◆ Plantings: provide visual barriers for many species
- ◆ Operant conditioning sessions

Food Enrichment

Although often the easiest form of enrichment to offer, care must be taken to stay within the nutritional requirements of the animal. This form of enrichment should be used sparingly.

Food enrichment involves both the type and presentation of food items. It provides the animal with not only pleasurable and novel tastes and smells, but depending upon its presentation, can elicit foraging and rooting behaviors which in turn increase an animal's energy expenditure and use of exhibit.

Some examples of food enrichment are:

- ◆ Browse: Nearly every species eats browse when available. Often arrangements can be made with Horticulture to receive trimmings. The

Zoo partners with Missouri Botanical Gardens and picks up browse there 1-2x/week when available.

- ◆ Enrichment Produce: The unit receives daily enrichment produce which may be doled out among all the animals.
- ◆ Presentation of food items: Both novel and dietary food items may be enriching for an animal if presented in a different manner. Produce may be fed whole, chopped small, placed in a feeder/pinata, or scattered in the exhibit. This is an excellent way of using food enrichment without exceeding the nutritional requirements of the animal.
- ◆ Live Insects
- ◆ Bread
- ◆ Specialty foods: The River's Edge may request a variety of "new and different" food items from the commissary. For example: cereal, seasonal fruits/vegetables, hard-boiled eggs, bullion, and peanut butter.

When experimenting with environmental enrichment **don't get discouraged**, an animal will not always react to the enrichment as you might anticipate. A common response to something new is fear. It might take several hours to several days for an animal to "decide" that the enrichment is actually something they enjoy.

Do not overuse a particular form of enrichment. Remember to remove enrichment items after a specified period of time. "Toys" left in the display quickly become "just part of the routine" and the animal loses interest. Variety and rotation of items are key to successful enrichment. The use of an "Enrichment Calendar" can ascertain that items are being offered on a varying basis and that enrichment is being offered to all species.

Clean up left over enrichment items. Not only do they lose their novelty, but they can become an eyesore in the exhibit. In between uses, enrichment items should be stored in the appropriate storage area.

All new forms of enrichment must be approved by the Curator or Zoological Manager. Once a particular form of enrichment has been approved, keepers are encouraged to implement it at their discretion. There is a list of approved enrichment items in the Enrichment binder in the EMF.

Take time to observe the animal when doing environmental enrichment and **record the animal's reactions in the daily report.** These records are quite useful when determining the success of the enrichment (it is of no use to continue to offer items to an animal if they are not used) and preventing overuse of a particular enrichment form. USDA and AZA also have expectations that zoos will have active enrichment programs for all species. By recording our enrichment activities in the computer and on our calendars, we can illustrate that we have an enrichment program for our collection.

The possibilities for environmental enrichment are limitless and all are encouraged to use their imaginations and aid the growth of the unit's Environmental Enrichment Program. Additional information may be found in the unit's files or in the Zoo's library.

Saint Louis Zoo River's Edge

Built-In enrichment/exercise:

Barn: In general the layout of the Saint Louis Zoo's River's Edge Elephant Management Facility allows elephants to have access to interconnecting paddocks...any combination of stalls can be provided. Paddock rotation as scheduled. Typically when elephants are in the barn for extended periods i.e.: winter months, different combinations of paddocks can be used. This allows for varied barn exercise periodically throughout the day.

Paddocks/Stalls: 1. *Climate Control option* of all 8 individual paddocks, radiant heaters are utilized.

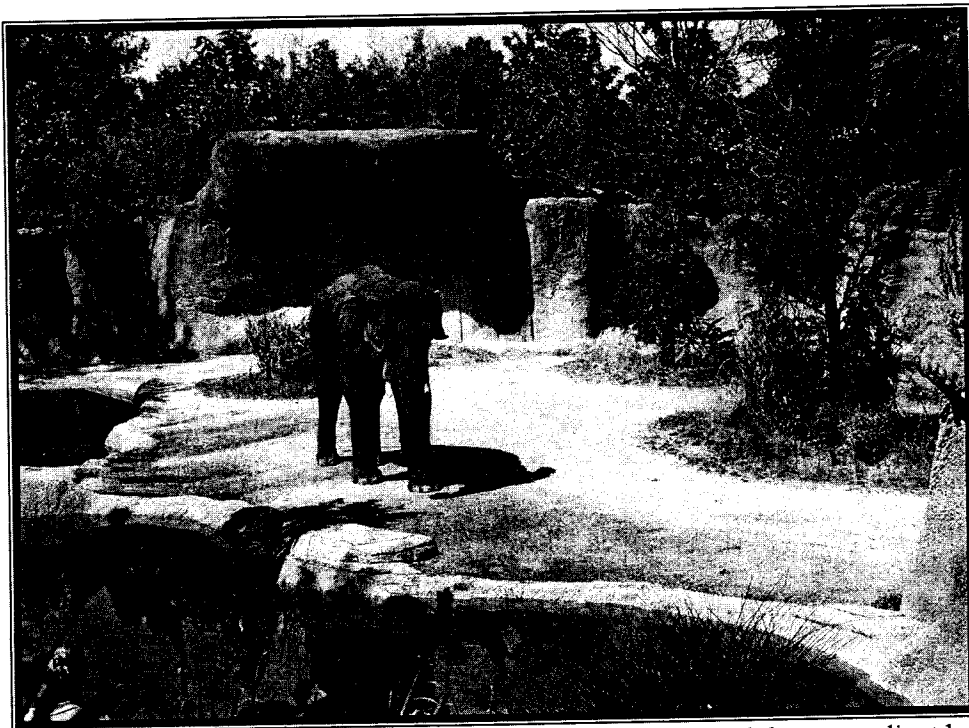
2. *Overhead Shower System* in paddock 7, there are 4 spigots located in each corner of the area, which are directed to the middle of the paddock, elephants can chose to be in direct spray or on the outer fringes of the spray. The spigots are ~20 feet high, with a manual shut-off valve, which allows for pressure control of spray. The water in the shower system is temperature controlled (typically we have 90 degree showers in the fall/winter months and 70-75 degree showers in the spring/summer months.

3. *Overhead Hoisting rings* found in all 8 paddocks also ~20 ft high. Can be utilized to hang routine and novel toys/furniture or fresh/dried browse, (as available). Typically, we have utilized tractor tires with varying lengths of chain holding single or double tires. Grain, Produce and novel browse are some examples of food enrichment that have been placed in the tires for trunk and neck muscle exercise as well as problem solving etc.

4. *Stall mesh size* ~3x3 inches, which is conducive to numerous heights for hanging browse, sticking produce in various places that would be novel for the animals

5. *Drinking/watering system* built for keeper control from outside the stall area, allowing for plain water or adding flavors (crystal light, teas etc.) at any point in the day as well as adding small chunks of produce. Waterer is also built for challenge/problem (brain exercise) solving for trunk/neck exercise and stimulation. The access into the waterer is trunk sized ~5 inches in diameter.

Exhibit: There are 3 interconnecting exhibits, each ~ ½-1 acre parcels. The yard space encompasses a naturalistic active environment. Yard 1 (Bull yard), includes a 9 ft deep pool that allows for complete submersion. Pool entrance is either via a sloping access point or several "diving in" points. The pool is surrounded and comprised of thematic rock- work and plantings. Yard 2 (Bull/Cow yard) includes; stand of shade trees and a pond with a recirculating stream running the length of the exhibit. Yard 3 (Cow/Calf yard) has a 7 foot deep pool in a cave-like recess with a waterfall which the elephants can walk/swim under.



Bull yard at Saint Louis Zoo's River's Edge (overhang in back houses radiant heater)

All 3 exhibits have varying slopes and terrain. Scratching surfaces and gunite walls that provide pockets for random food placement are found in each yard. There are several climate control choices; pools, streams, shade, wind breaks and heated over-hangs. Each yard also has 2-3 rounded, embedded steel stakes that allow for securing dead fall trees and tractor tires for rotating routine and novel enrichment toys/furniture.

Off-Display: This area affords privacy and is out of site of visitors. There is a 6 pole visual barrier, ~ 30 feet high, made of pine in the middle portion of the yard. In one corner of the yard is a man-made hill constructed of large boulders for play and leg exercise. The visual barrier is utilized for scratching and presentation of browse. The boulder hill has also been used during breeding sessions.

**Natural features were touched on throughout the previous sections. Substrate additions on a scheduled basis are incorporated in outside and inside routines creating dusting material and promoting play behavior (pine bark mulch, pine shavings, variety hay and shredded paper are some examples). Rotating/shifting individuals throughout the different exhibits reinforce natural migratory tendencies and introduce varying group of dynamics, strengthening bonds and stimulating new relationships. This also acts as a catalyst for increased activity and play behavior. Due to the length and depth of the exhibits, food presentation alternatives are varied and allow for natural foraging behaviors. This encouraged by the most natural environmental enrichment (digging, walking, reaching etc.) food scatter, hanging browse (dry/fresh), feeder puzzles, rotating feed stations to name a few naturally induced methods of foraging.

Exercise Opportunities:

- Barn**
1. Tailor-made trunk waterers—Trunk, muscle exercise
 2. Hanging objects from ceiling (Hoist) –Trunk, neck muscle exercise
 3. Mesh size –Trunk, neck muscle exercise
 4. Varying food presentations—Trunk, neck muscle stimulation/problem solving
 5. Hanging browse—(same as above)
 6. Varied use of all barn space, open all stalls to animals, or combinations of stalls—Mobility/locomotion , all muscle groups stimulated
 7. Daily “practice” in the Elephant Restraint Device, which houses a scale, elephants are weighed daily and must compensate for slight movements (balancing/leg muscle, all over body exercise).

Paddock/Stalls: Daily husbandry through operant conditioning of varying lengths/complexities

1. Routine Husbandry ie; foot baths, blood draws, trunk washes etc.
2. Training –Operant Conditioning
 - a. Learned behaviors
 - b. New behaviors to be shaped

**The above two points all trigger foot, leg exercise, brain stimulation, stretching, laying, generally total body mass exercise

- Exhibit:**
1. Exhibit rotation
 2. Exhibit shifting (all access)

**the above two stimulate natural migratory behavior

3. Pools/Streams/Waterfalls—stimulate natural water behaviors; play, bathing, and acts as a type of hydrotherapy for all muscle and joint types of exercises.

****Also built-in to our EMF enrichment plan is a detailed daily/monthly/annually posted enrichment calendar, as well as an established enrichment evaluation process. The enrichment calendar is prepared a month in advance, with daily a.m. and p.m., planned opportunities.

For example a.m.—Grain bags with p-nut butter smeared inside

p.m.—Chalk drawings on gunite and or cement walls

Each month is laid out by alternating keepers to encourage novel ideas and individual investment in the enrichment process. Several categories are covered on the monthly pre-planned calendar such as; **Touch;** tires, paper shreds, bubbles, showers, mulch

Taste; flavored water, whole foods, pastes, phonebooks, novel

produce

Smell; spices, vinegar, perfumes

Sight/Sound; mirrors, nature cd's, chalk drawings, colored light bulbs

Novel Training; shaping of new behaviors

Rest days (The above are a small portion of options)

The evaluation process involves a number system involving direct and indirect daily observations by keeper staff. Ex. Directs Observation—1. Animal show some interest in enrichment, 2. Animal ignores enrichment.

Elephant Environmental Enrichment Protocol

Goal: To provide mental and physical stimulation for the elephants. In doing so, retain natural behaviors, eliminate aggression and stereotypic behaviors and promote social interaction.

Equipment: Approval Form
Evaluation Form
Calendars
References - *Unit Enrichment Book, St. Louis Zoo Enrichment Book**,
*AAZK Enrichment Book**, *Shape of Enrichment**
Materials needed to make items
Exercise Routine

Procedure: Baths - Once a week each elephant will be bathed to promote good skin health. The elephant will be isolated in an area in or near the barn. One or two keepers need to be present, depending on elephant and personnel. The elephant will be asked various behaviors in order to hose off its entire body. Depending on the skin condition, the approved elephant gel soap will be sprayed on, scrubbed with brush (optional, depending on personnel) and then hosed off.
New Items - Develop an idea for a new item, fill out the approval form, and get it approved. When approved, create and give to animals. For the first exposure to the new item, fill out an evaluation form. Then after several uses of the item, fill out another evaluation form to reassess the item to make sure it is still effective.
Daily Items - Refer to monthly calendars, gather required materials, and give to animals. These items are only suggestions and do not have to be used. Also, the references can be used to think of other approved items to use as substitutions.

When any item is given, write that it was given in the proper log and any additional observations. Also, if needed, fill out an evaluation form.

Calendars - Randomly choose items for each day of the month and fill out calendar form. Can do this monthly or less often.

* - These references can be found in the zoo library.