

Naturalistic Enrichment

Ideas for Integrating Enrichment Features with Immersion Landscapes and Interpretation

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Abstract

Positive zoo visitor experiences of animals behaving naturally in realistic displays can be enhanced with interactive, dynamic enrichment features. This paper will present examples using inexpensive natural materials which support interpretive storylines as a practical alternative to highly artificial commercial enrichment devices which detract from the carefully planned, naturalistic experience.

Introduction

"We've spent half a million dollars making this zoo habitat exhibit look like a natural jungle to present a message about wild animals. You've stuffed it up with cheap playground equipment!" exclaimed Mr. Hafter B. Green, exhibits department.

"Gorillas need more than bushes," responds Ms. Pollyanna Pett, animal keeper. "These red boomer balls and colourful climbing cables are easily available. Besides, zoos are for animals first...without the animals we wouldn't have a zoo!"

"Wrong! Zoos are for people first," retorts Mr. Green. "Without visitors we wouldn't have a zoo."

Right or wrong, black or white, either/or are all the wrong phrasing for success. These terms perpetuate an antiquated debate and insure that either the animals or the zoo's enrichment objectives are losers. As Forthman (1984) showed over twenty years ago, zoo animals benefit from both larger naturalistic habitats and environmental enrichment.

Understand Play and Occupation

"Play" is the work young animals do to develop survival skills and fitness. "Occupation" is the work adults do to stay alive. Think like a

wild animal. Ask yourself "What would animals of a given species use for play and occupation in the wild?" Then provide the same or very similar opportunities in animal displays. Since most play and food gathering opportunities in the wild are spontaneous and varied, spontaneity and variability should be encouraged in zoo animal facilities.

For example, I once observed a young lioness in Kenya snap up a baby antelope she stumbled upon while playing with her brother. Was this play or occupation? Either way, I suggest it was far more enriching than having her food delivered in the daily routine of zoo lions.

Most animals manipulate their environment. Some like apes, bears, parrots and elephants can take this to extremes. Such animals should be provided with disposable balance logs, browse and sway branches (see later examples). Strong male animals of many species engage in play combat with others of their species as they grow up and should benefit from real exertion against moveable, opposing forces. Elephants push trees and bungee-activated or counter-balanced wrestling or feeding devices can be made which respond to an animal's attack in a realistic way, further stimulating play behaviour. Simple replaceable devices like balance logs can be made more interesting to animals with the application of scents, sounds or tastes found to be of interest to the animal.

Some aquatic species are keenly aware of gradients of temperature, currents and even electromagnetic fields. Discover ways to allow these animals to interact with and manipulate such environmental gradients.

Some social animals like apes seem to enjoy dominating the humans around them. The Los Angeles Zoo experimented with a simple device which allowed chimpanzees to give a shower (actually a mist spray) to zoo visitors who chose to stand under the sprayer. Some elephants and dolphins seem to enjoy spraying water on guests. Perhaps there is an acceptable way to turn this behaviour into an enriching experience for both human and non-human participants.

Understand the Message

Advanced zoo displays predetermine the message they intend to convey to their visitors with great care, expressing it in theme, storyline and meaning embedded in the naturalistic landscape. For example, they may communicate that animals are independent, competent beings splendidly evolved for the wild lives they lead. Highly artificial enrichment features borrowed from playgrounds or pet stores contradict such carefully prepared messages, substituting the opposite message that wild animals are dependent pets.

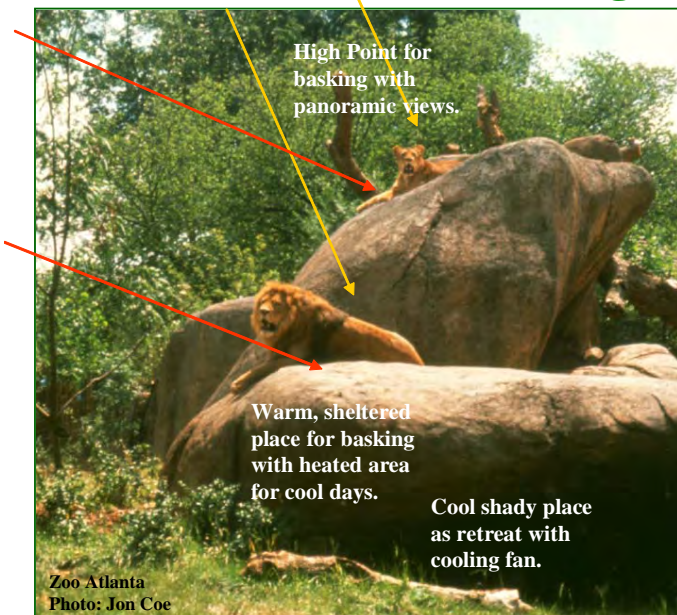


Integrating Storyline and Enrichment Features

With a little imagination and Hancock's perspective (2001) "*nature is the norm*" for wildlife, it is easy to imagine simple changeable, interactive enrichment features which facilitate foraging and other occupational activities for adult animals while stimulating appropriate play for young animals, all the while breathing life into exhibit interpretation. Here are some examples:

- Built-in Features of Enduring Interest to Animals
- Fixed Enrichment Features
- Moving Foraging Features
- Hidden Enrichment Features
- Temporary Enrichment Features
- Off-Exhibit Enrichment Features

Built in Features of Enduring Interest to Animals



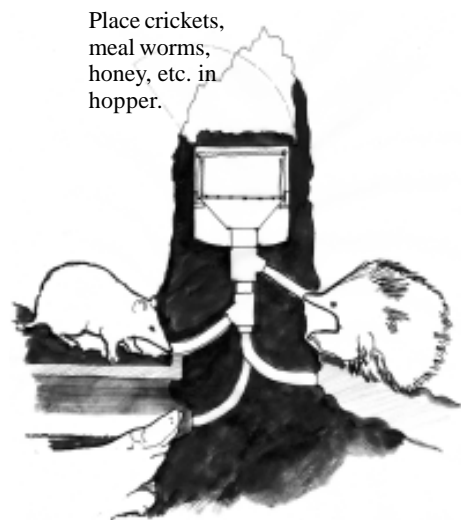
Zoo Atlanta
Photo: Jon Coe

Notes: Make all favoured areas visible to public.
Place animals above viewers for maximum impact.

Suitable for

- Large and small carnivores
- Large raptors
- Baboons, macaques and monitors.

Basking Rocks



Suitable for

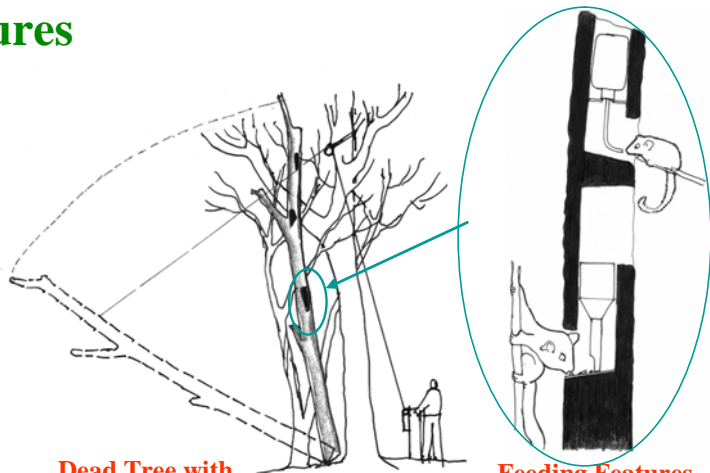
- Small to medium carnivores

Artificial Termite Mound Feeder

Fixed Enrichment Features

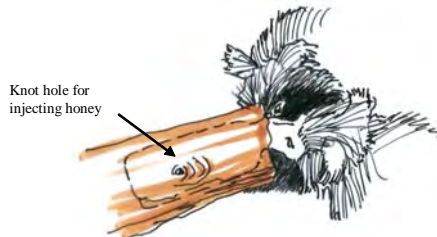


PVC Cricket/Meal Worm Feeders



Dead Tree with Feeding Features being positioned

Feeding Features hidden in Dead Tree



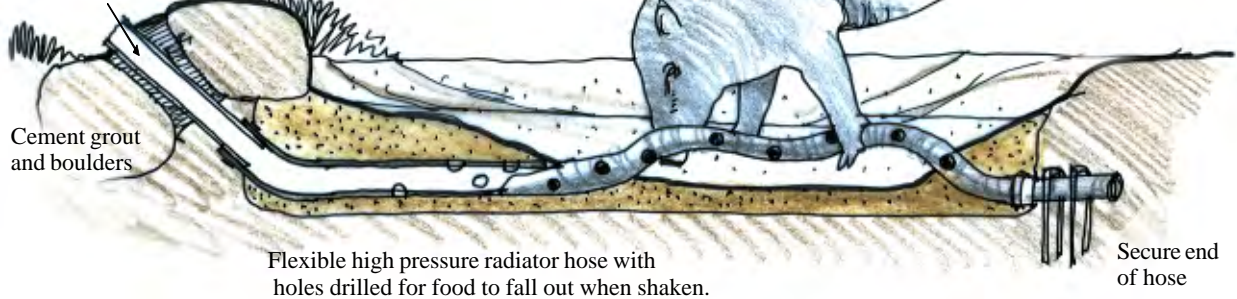
Sloth Bears at Honey Log

From photo by Brij Gupta

Moving Enrichment Features

Babirusa Root Feeder

Pour nuts, crickets, etc. into PVC pipe.



Babirusa taught to dig up hose and shakes it to release treats.



Photo: Active Environments

Will the Babirusa use it?

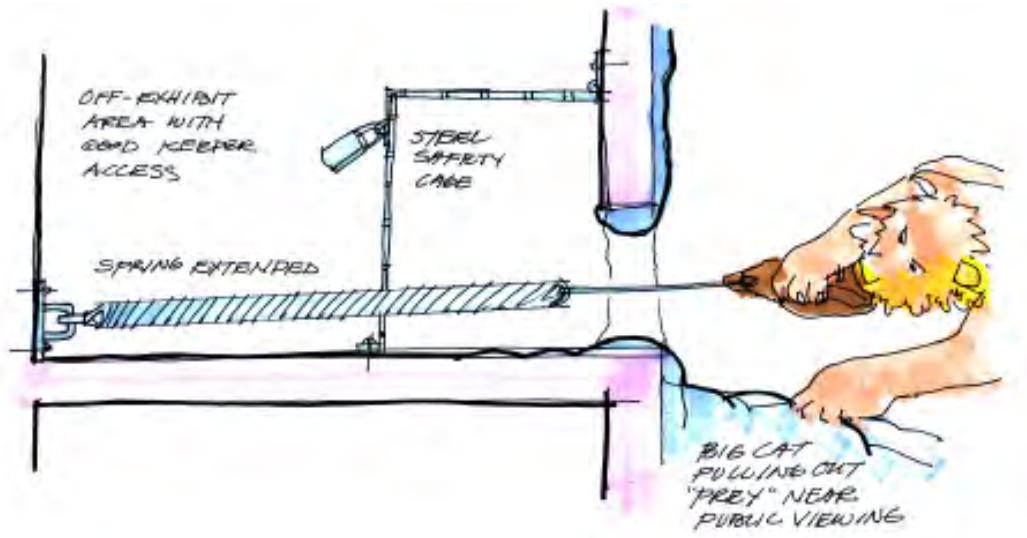
Prototype in use at Houston Zoo.



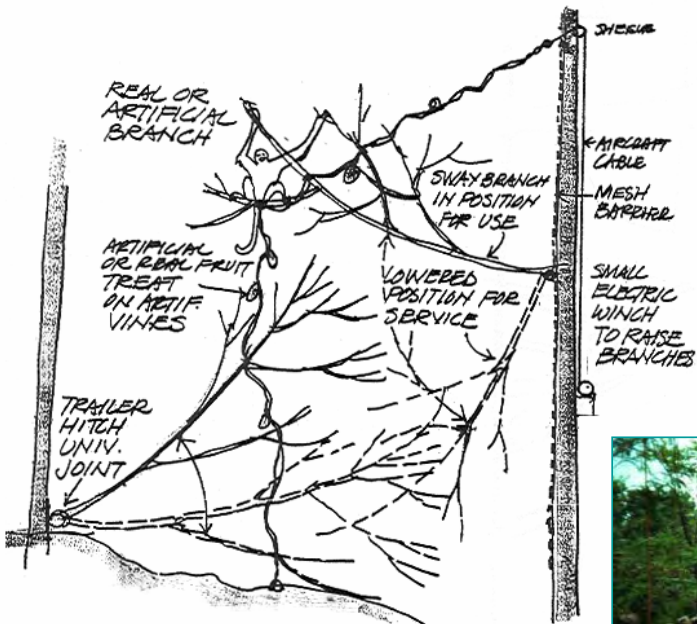
Photo: Active Environments

How well is it liked?

Enough to cuddle with when sleeping.



Hidden Bungee Feeder



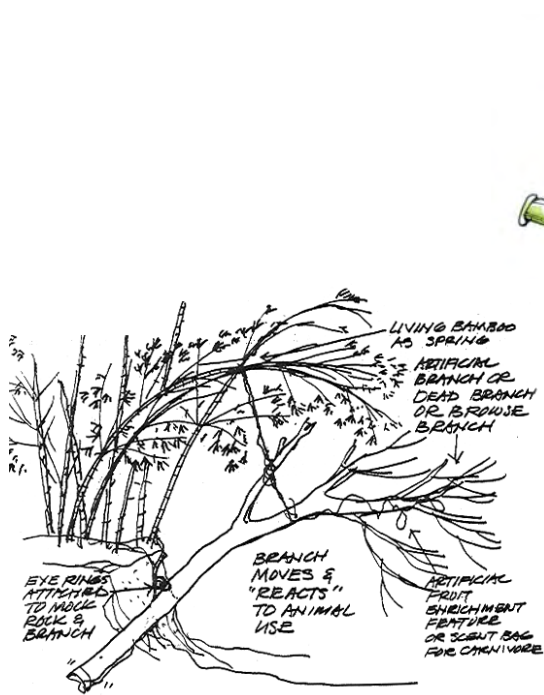
Sway Branch Concept



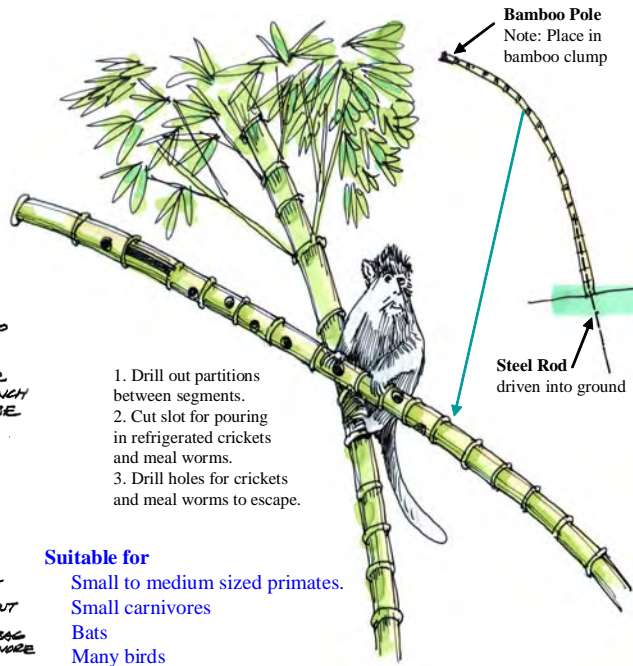
Photo: Nevin Lash



Denver Zoo
Photo: Jon Coe



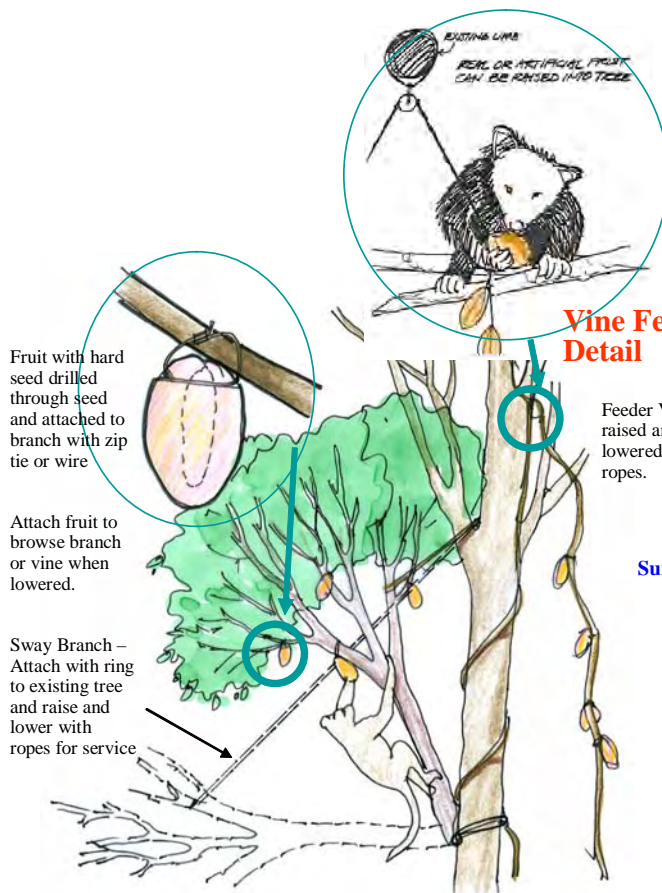
Low-Tech Sway Branch



Suitable for

- Small to medium sized primates.
- Small carnivores
- Bats
- Many birds

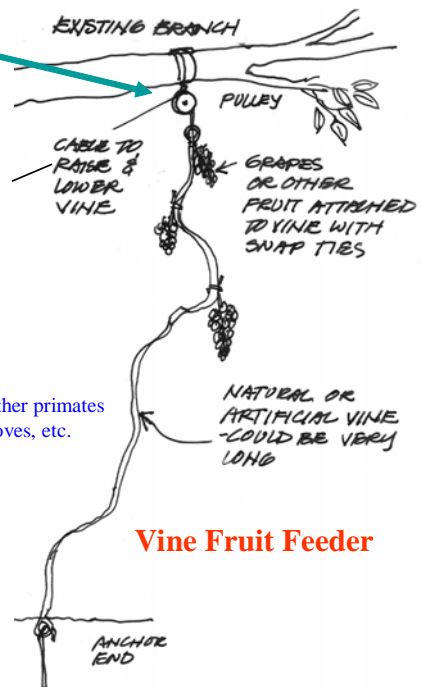
Changeable and Interactive Bamboo Cricket/Meal Worm Feeders



Vine Feeder Detail

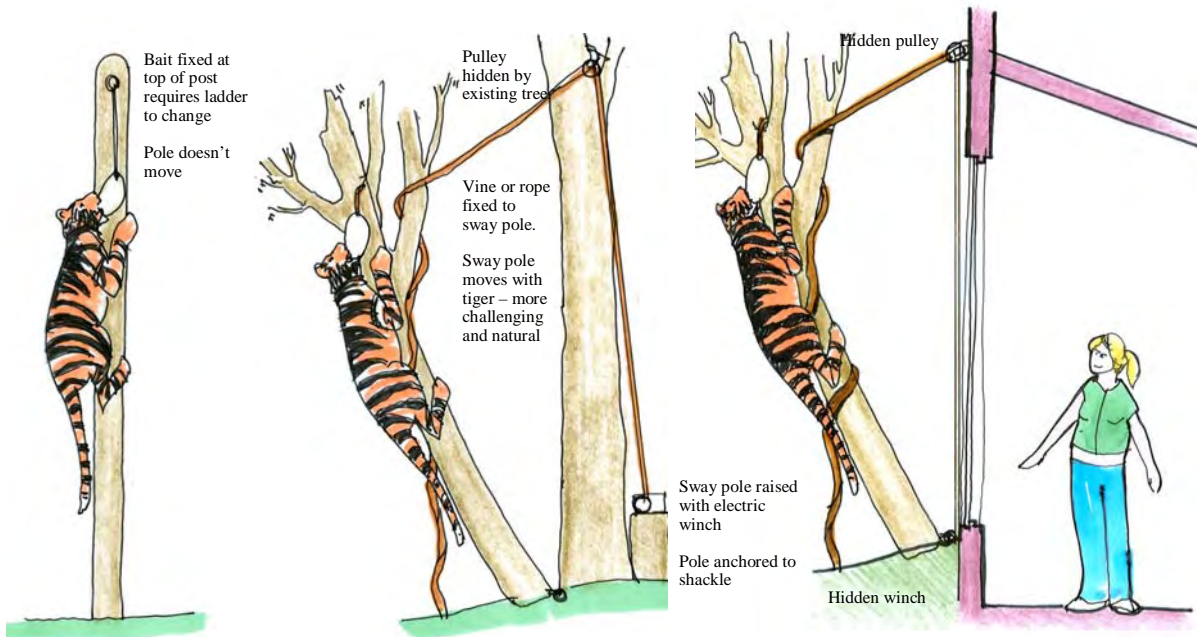
Feeder Vine raised and lowered with ropes.

- Suitable for
- Apes and other primates
 - Hornbill, doves, etc.
 - Binturong
 - Red panda
 - Squirrel
 - Fruit bats
 - Elephant



Vine Fruit Feeder

Moving Enrichment Features

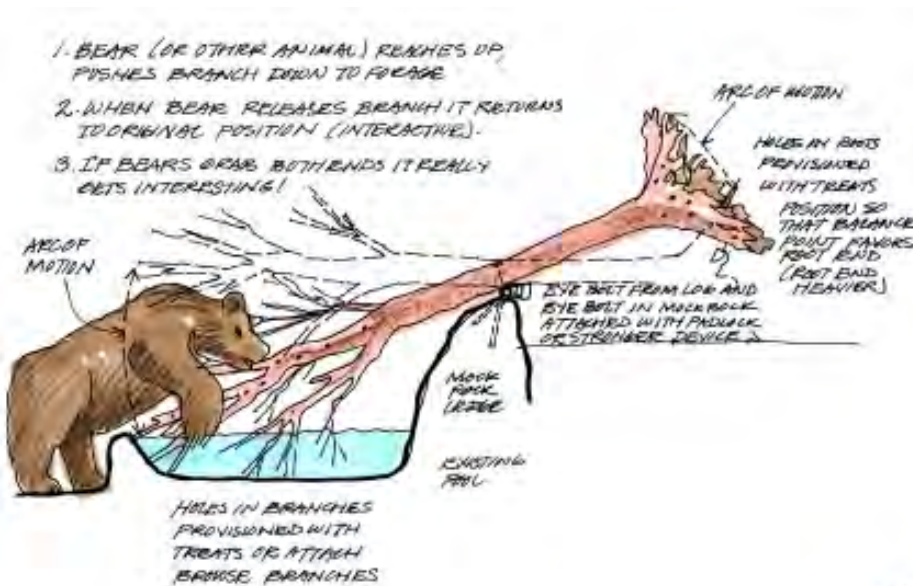


Artificial Feeding Pole
(From Young 2002 Fig 8.1)

Sway Feeding Pole

Sway Feeding Pole Attached to Building

Balancing Treat Log



Suitable for

- Bears
- Big cats
- Giraffe
- Rhinos, etc.

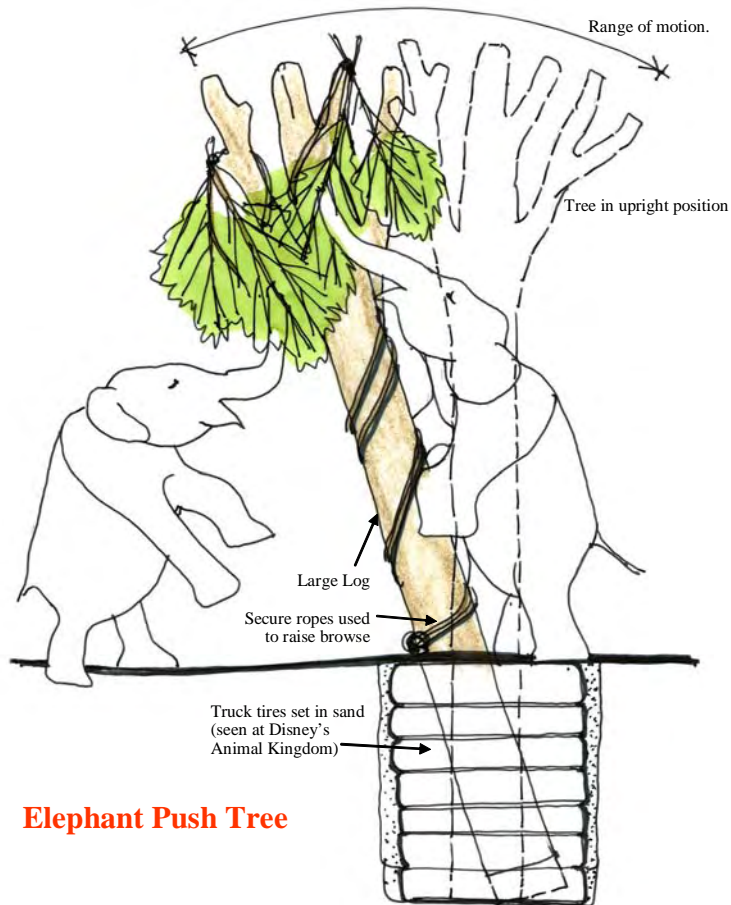
Smaller version suitable for

- Large birds
- Small cats
- Smaller primates, etc.

Drill holes through branches and stuff with peanut butter, etc.

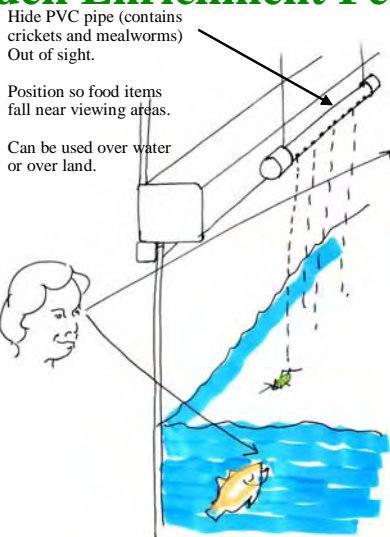


Log floats and bobs in pool. Motion of bobbing log attracts animals.



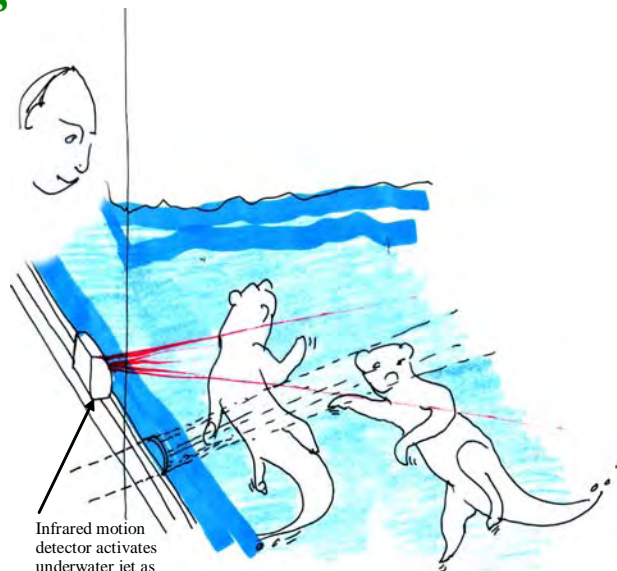
Elephant Push Tree

Hidden Enrichment Features



Suitable for
Water Animals
Fish
Otter
Platypus

Land Animals
Mongoose, Meerkat
Sun Bears, Sloth Bears
Foxes
Macaques
Bats



Infrared motion detector activates underwater jet as animals pass by.

Water may be warmer or cooler than ambient.

Water jet may transport food.

Suitable for
Otters
Seals, penguins, sea lions
Water monitor
Pygmy hippos and hippos
Elephants
Tapirs
Crocodiles

Temporary Enrichment Features



Lure Coursing for Cheetahs

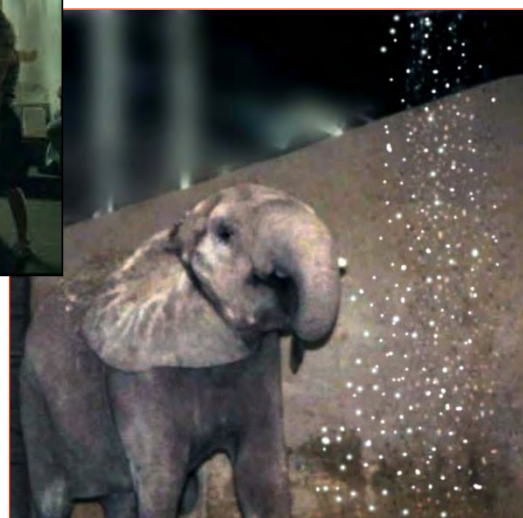
Off-Exhibit Enrichment Features



Highly enriched orangutan Day Room at Denver Zoo.
Photo Jon Coe



Use everything in Off-Exhibit Areas



Elephant-Activated Shower at Columbus Zoo.
Photo Columbus Zoo

Integrating Enrichment and Setting

The trick is to integrate the appropriate form of enrichment with the setting. Here are some general guidelines:

- Keep it natural or within theme whenever possible in display areas, especially in immersion exhibits. As Hancocks (2006) points out, why spend large sums of money on finely tuned immersion displays then dilute their message to the public by inserting out-of-character commercial toys?
- Features of enduring interest to animals should be built-in and permanent, including sun-heated and shade-cooled overlooks, visible basking and rest areas, water features and some climbing features.

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- Summary:**
- Think like a wild animal
 - Keep it natural in display areas
 - Understand and support storyline
 - Build in features of enduring interest to animals
 - Provide easily changeable natural attractions
 - Use hidden delivery systems
 - Use everything in off-display areas
 - Budget for evaluation and replacement.



Photo © J. Sebo

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- Changeable interactive features include vines, scratching posts, balancing logs, browse, real or artificial fruit and simple treat delivery systems.
 - Use hidden enrichment systems so their appearance isn't an issue, including artificial heating and cooling systems, treat delivery systems, and animal controlled water jets or air bubbles in pools and streams. Tether artificial toys so the animals' play actions, but not the toys are visible to viewers.
 - When all else fails, especially in artificial looking exhibits, use commercial, off-the-shelf products and adapt the overall message to fit the exhibit.
 - Use any and all enrichment features imaginable in off-display areas where many zoo animals spend the majority of their time. Designers should work with zoo staff to provide abundant attachment points and adequate storage and access for enrichment programs.
 - Budget for evaluation and replacement: Wild animals live in self-renewing landscapes. Zoo animals require us to provide this service.

Conclusion

"Exhibits are a zoo's natural voice." (Coe 1996)

If we are to win public support for our goals of wildlife conservation, education and love of animals, we must speak with one integrated voice and message while also demonstrating humane and enlightened care for animals entrusted to us. Enrichment and display features must serve both our animals and our message.

As these examples show, naturalistic enrichment ideas begin by looking closely at how wild animals interact with each other and their environments and by trying to put ourselves in their places, "If I were a wild gorilla or a hornbill, what would I want and need. How would I 'see' the world?" From this perspective it is easy to imagine many enrichment opportunities made from easily available natural or natural looking materials, including features that are inexpensive and easily replaceable.

Let his approach guide your inventive thinking in zoo display areas. And in off-display areas, sure, use everything you can think up from bush, pet shop or playground.

References

- Coe, J. C. and Dykstra, G. 2006. "New and Sustainable Directions in Zoo Exhibit Design" in *Wild Animals in Captivity*, Kleiman, D., Editor, University of Chicago Press, Chicago (in press).
- Coe, J. C. 1996. "What's the Message? Education through Exhibit Design" in *Wild Animals in Captivity: Principles and Techniques*, Kleiman, D, Allen, M., Thompson, K. and Lumkin, S., Editors. University of Chicago Press, Chicago, pp 167-174.
- Forthman-Quick, D. L. 1984. "An Integrated Approach to Enrichment Engineering in Zoos" in *Zoo Biology*, 3:65-78.
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- Hancock, D. 2006. "The History and Principles of Zoo Exhibition" in *Wild Animals in Captivity*, Kleiman, D., Editor, University of Chicago Press, Chicago (in press).
- Hancock, D. 2001. *A Different Nature: The Paradoxical World of Zoos and Their Uncertain Future*, University of California Press, Berkeley.
- Whittaker, G, Whittaker, M. and Coe, J.C. 2005. "Prototyping Naturalistic Enrichment Features: A Case Study" at *7th International Conference on Environmental Enrichment* hosted by the Wildlife Conservation Society, 31 July to 5 August 2005, NY (in press).

Suggested Reading

- Understanding immersion design see: Coe, J. C. 1985. "Design and Perception: Making the Zoo Experience Real" in *Zoo Biology*, 4:197-208.
- Building in enrichment opportunities see: Coe, J.C. 1992. "Plan Ahead for Behavioural Enrichment, Environment Enrichment Kaleidoscope: Research, Management, Design" in *1992 AZIPA Annual Proceedings*, American Zoological and Aquarium Association, Silver Springs, MD.
- Complete text and excellent reference: Young, Robert J. 2003. *Environmental Enrichment for Captive Animals*, UFAW Animal Welfare Series, Blackwell Publishing Company, Oxford, Swanston Street, Carlton South, VIC 3052.
- A rich source of mostly "do-it-yourself" ideas by enthusiastic zoo keepers: *The Shape of Enrichment*: <http://www.enrichment.org>.
- For many examples of simple, naturalistic enrichment improvements advancing captive animals' well being see: Hancock, D. 2001. *A Different Nature: The Paradoxical World of Zoos and Their Uncertain Future*, University of California Press, Berkeley.