

Enrichment: Introduction, Definitions, and The 5 Categories

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Do You 'Do Enrichment'?

Raise your hands



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Why Environmental Enrichment?

"What cannot be avoided in keeping animals in captivity is isolation from the life cycle; therefore, a fresh, artificial cycle must be created. Naturalness in the treatment of wild animals does not consist, therefore, of a pedantic imitation of one model section of nature. It means that a substitute for it must be found suitable for animals taking into account the new conditions of life in captivity"

Heine Hediger, 1950



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Managing for Optimal Welfare

1. Mental Health
2. Behavioral Health
3. Physical Health and Fitness



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What is Enrichment?

Enrichment Definitions:

An animal husbandry principle that seeks to enhance the quality of captive animal care by identifying and providing the environmental stimuli necessary for optimal psychological and physiological well-being

A dynamic process in which changes to enclosure features and husbandry practices are made with the goal of increasing behavioral choices and drawing out species-appropriate behaviors and abilities (Shepherdson, 1998)



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But what does this really mean?

- What do you think it isn't?
 - It's not just TOYS and FEEDERS
- What do you think it is?
 - It is good husbandry



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What Should an Enriched Environment Do?

Encourage appropriate interactions with the environment which promote making meaningful choices that afford a feeling of control

- Allows animals to respond to environmental changes
- Encourages species-typical behavior
- Eliminates frustration by promoting physical activity and psychological stimulation
- Encourages physical fitness and cardiovascular health
- Facilitates full range of social interactions



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Key Points:

1. Change to Environment
2. Opportunity to Express Behavior
3. Enhances Welfare

Enrichment is holistic and designed for the individual

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5 Categories of Enrichment

- Developed by Shape of Enrichment
- Categories are not mutually exclusive
- Consider what's important to the species AND to the individual
- Needs may change seasonally or throughout an individual's life stages

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Social	Cognitive	Physical Habitat	Sensory	Food
Conspecifics <ul style="list-style-type: none"> • Social • Solitary • Group type 	Mental Stimulation <ul style="list-style-type: none"> • Puzzle feeders • Training • Problem solving 	Perching <ul style="list-style-type: none"> • Size, shape • Moves • Texture • Vistas 	Refuges <ul style="list-style-type: none"> • People • Animal • Noise • Visual 	Tactile <ul style="list-style-type: none"> • Manipulanda • Brush board • Substrate pile
Other Anim <ul style="list-style-type: none"> • Hoof stock • Mixed flock • Primates 	Novel Experience <ul style="list-style-type: none"> • Foods • Items • Scents • Social • View 	Substrate <ul style="list-style-type: none"> • Variety • Piled • Spread • Water 	Climate Gradient <ul style="list-style-type: none"> • Light • Humidity • Temp • Air/ water flow • Light type 	Novel <ul style="list-style-type: none"> • Melon for carnivores • Rotational items
People <ul style="list-style-type: none"> • Keepers • Public 		Nest/Den <ul style="list-style-type: none"> • Variety • DIY • Materials 	Odor/Taste <ul style="list-style-type: none"> • Pkg scents • Nat scents • Novel 	Presentation <ul style="list-style-type: none"> • Feeder • Hidden • Scatter • Frozen
Other <ul style="list-style-type: none"> • Mirrors • Look alike • Toys 			Auditory <ul style="list-style-type: none"> • Nature, white • Make own 	
			Visual <ul style="list-style-type: none"> • Pred/prey • Mirror • Movement 	

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1. Social

- Conspecifics
- Other Animals
- People
- Other



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Social: Conspecifics

- Consideration of natural behavior
 - Territorial
 - Solitary
 - Social structure
- Individual history
 - Therapy monkey
- Specific objective
 - Decrease aggression



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Make sure it's Enriching!



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Conspecific but *Not* Cagemates



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Other Animals

- Encounter in wild
- Stimulation of all sorts!
- Need to increase in captivity



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Social Environment: Mixed species

- Physical environment consistent?
- Captive environmental needs
- Predator avoidance
- Reproduction



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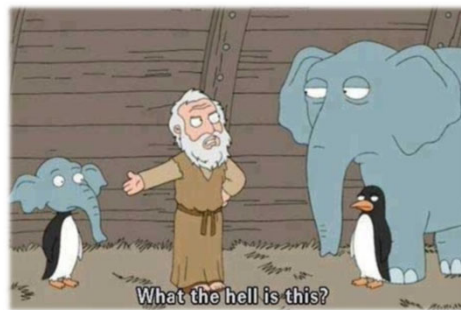
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CAUTION . . .



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Special Needs



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Social Environment:
Human-Animal Interactions



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Snowflake's Window
to the World

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Visitors:
Reinforcement
of undesirable
behaviors –
Flipping baboon



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2. Cognitive

- Training Session
- Puzzle Feeder
- Problem Solving
- Novel Experience

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Positive Reinforcement Training

- Training is enriching
- It challenges animals to think and 'work' for a living
- It should be fun

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Positive Reinforcement Training

- Enrichment value
- Learning, thinking, problem solving
- Socialization

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Cognitive beyond 'The Training Session' – Learning is enriching

Joy of Learning

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Puzzle Feeders

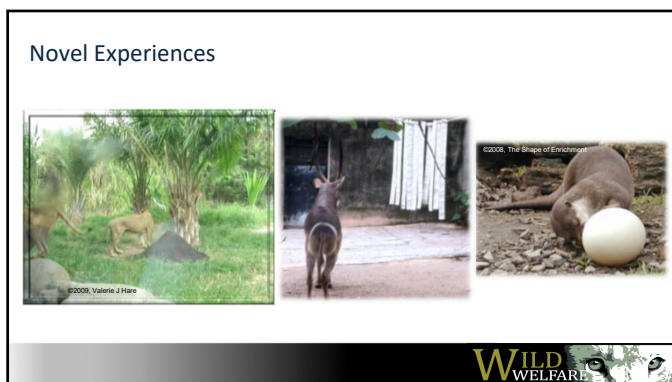
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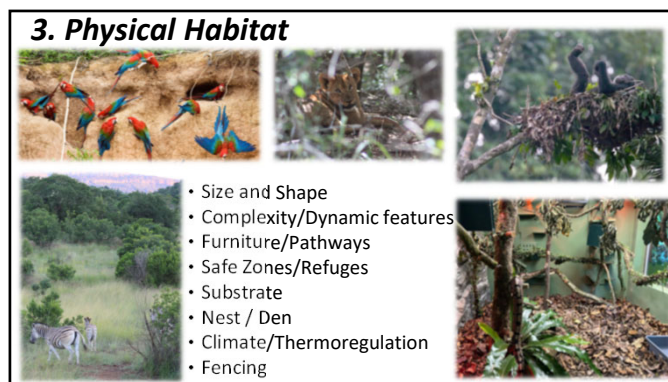
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Choice in HOW to use – Individual & Species Needs and Wants



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Perches / Climbing Structures

Variety is the Spice of Life

- Diameter
- Texture
- Elevation
- Flexibility / Mobility



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Pathways



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Textures

Diameter



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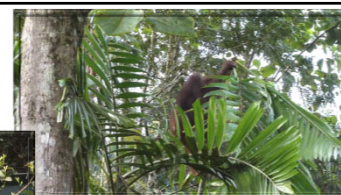
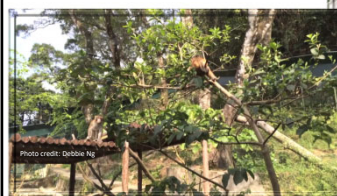
Terrain, Elevation, and Placement



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Flexibility: Live Branches



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Movement – Artificial Materials, but still FUN!



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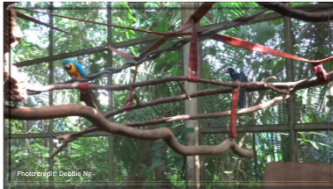
Mobility: **Dynamic Branches**



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Dynamic branches move *in response* to the animal



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Mobility: Hanging Tube or Bottle, Wobble Board, Platform

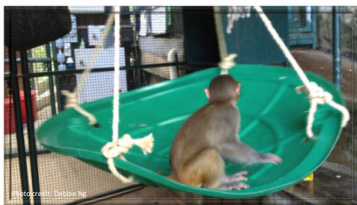


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Resting Site Style (e.g., fork, cavity, hammock, platform, hill)



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Placement: Use the whole enclosure!
3-Dimensional use of space




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A Room With a View

- Provide opportunity to do 'sentry' behavior
- Giving animals the chance to see can reduce anxiety
 - Perching
 - Mirrors
 - Pop outs



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Polar Bear: What do you think of this habitat?



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Refuges, Cover, Visual Screen

- **Refuge:** Place of safety
- **Cover:** Object or vegetation that animal can use to feel hidden
- **Visual Screen:** Prevents animal from seeing public and other animals
 - Because we all need to get away sometimes!!




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Refuges

- Within enclosure
- Varied Orientations / Elevations
- Multiple Entries/Exits
 - ❖ No "dead ends"
 - ❖ Subordinates can't be trapped



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- Escape from people
- Feel safe for training



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Cover

- Hiding or perception of feeling hidden
- Within enclosure
- Public and other animals
- Multiple purposes (e.g. feeding station)



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Hide in Plain Sight



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Visual Screening

- Prevents animal from seeing public and other animals **Partial** Visual Barrier
- In or outside of enclosure
- Illusion of visual barrier



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Partial Visual Barrier (PVB)



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Direct Site Lines and 360°Public View ↓Welfare



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Total visual barriers can be too much



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Substrates

- Options for everyone in the enclosure
- Varied



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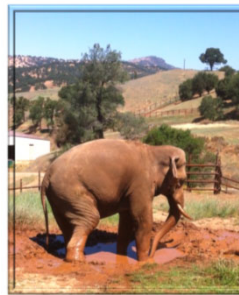
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Substrate: Variations

- ✦ Texture
- ✦ Granularity
- ✦ Depth
- ✦ Transportability
- ✦ Modifiability (reshape, tear)





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Substrate Examples

- ✦ Loose dirt, Potting soil
- ✦ Water, Mud
- ✦ Wood chips, shavings, wool
- ✦ Paper
- ✦ Small rocks, Log/branch pile
- ✦ Compacted dirt, Rock slabs
- ✦ Natural vegetation – grass, fresh and dry leaves. Straw/hay

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Water - Shower or Pool





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Surprise Shower




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Water: Mud Wallow, Deep Pool







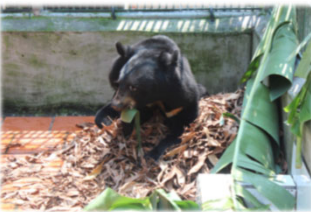

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Substrate vs. Substrate Piles

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Substrate Piles

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Den / Nest

- More than 1
- Understand natural behavior
- Varied Size, Texture, Orientation
- Opportunity to DIY



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Nesting Material

Variety

- ✦ Texture
- ✦ Transportability
- ✦ Modifiability (reshape, tear)



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Nesting Material



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Den / Nest

Best if DIY



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Great Apes – Nest building



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Climate Gradient



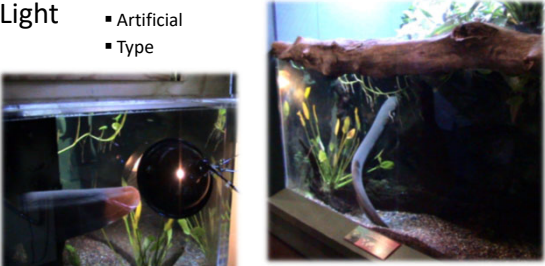
- Light (incl. type)
- Shade
- Temperature
- Humidity
- Air or water flow
- Noise

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Light

- Natural
- Artificial
- Type




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Shade

- Dappled or partial shade
- Deep or full shade




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Sun / Shade

- Dappled or partial shade
- Leaves offer dappled shade...
- ... and can be used for cagetop feeding, too!




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Temperature Choices

- Heat
- Cooling options




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Heat Lamps

- Offer perching at a variety of heights to achieve temperature variation
- And enough for all individuals to access



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Enclosure Design to Manage Social and Medical Situations = Behavioral Management

- Visual Barriers and Refuges
- Divided Enclosures
- Off View Enclosures
- Enclosure Extensions
- Open Enclosures



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Barriers (Fencing)

- Consider the animal's point of view
 - ❖ Vertical vs Horizontal Bars: Binocular Vision
 - ❖ Enclosure space options

SHAPE OF ENRICHMENT WILD WELFARE

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Enclosure Extensions

- Aerial and terrestrial walkways
- Pop Outs




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Tigers stretch legs at Philadelphia Zoo




Aerial Walkways




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Flexibility of Space

- Many anchorages for mounting enrichment feeders, objects, furniture (perches)
 - Mesh or bars in some areas
 - Eyebolts embedded for ease of changing



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4. SENSORY


- Tactile
- Olfactory/Taste
- Auditory
- Visual
- Other

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Tactile

- Natural
- Artificial




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Manipulable Objects

- Artificial
- Natural



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Something that moves or
“fights back”

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Destructible Enrichment

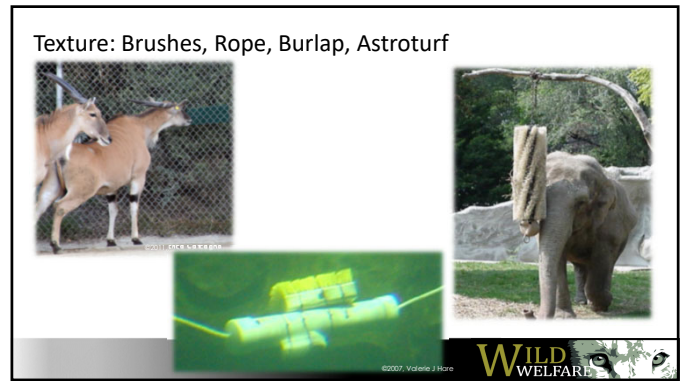


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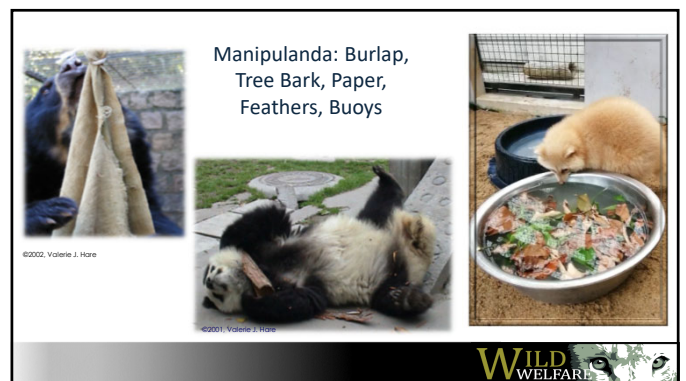
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- Visual

- Mirrors
- Cautions
- Novelty



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Visual: Mirrors, CDs - Inside or Outside Enclosure



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Visual: Colored Water, Bubbles, Painting



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Visual, Olfactory, Tactile: Other Animals



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Auditory

- Sounds animals make themselves = CONTROL
- Sounds humans make for animals = NO control
- Nature sounds
- Non-nature sounds
- White noise
- Vocalizations



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Food Presentation

- Tap into an animal's adaptations and natural behaviors
- Occupy their time and/or energy

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Food Presentation Most animals prefer to work for food - Aka "Contra-freefeeding"



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Make sure the animal can succeed – Avoid Frustration




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Feeding Behaviors

- Eat
 - ✧ Same food = same amount of time
 - ✧ Regardless of presentation
- Forage
 - ✧ Recognize Food
 - ✧ Find Food
 - ✧ Obtain Food
 - ✧ Process Food



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Foraging Behaviors - Great Focus for Enrichment!



Photo credit: Daxton Tig

1. Recognizing Food
 - Scents
 - Sounds
 - Visual
2. Finding Food
 - Following a scent trail
 - Locating food in a maze or puzzle

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Locate and Obtain Food, then Process . . .



3. Obtaining Food
 - Chase, Catch, "Kill"
 - Dig Up
 - Climb and Grab
 - Puzzle Feeders
4. Processing Food
 - Whole Fruit and Vegetables
 - Carcass
 - Pluck Feathers, Remove Skin

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Encourage searching before acquisition



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Feeding Strategies to Fill Time and Expend Energy



- Scatter feed
- Hidden / Buried food
- Frozen
- "Spike"
- Whole/Large pieces
- Puzzle feeder
- Anything requiring "work" or "thinking"
- And promoting natural behaviors

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Scatter Feed



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Scatter: Elevation



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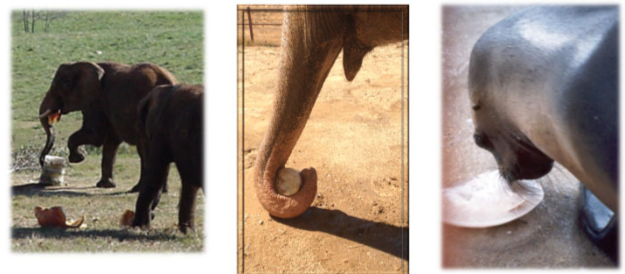
Hidden / Buried



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Frozen – Item or In Something



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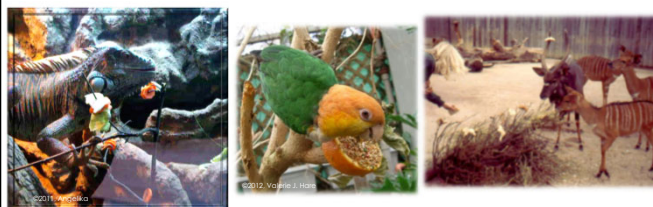
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Frozen, Novel Food: Fruit-, Juice-, and Soup-sicles



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"Spike" Feeding

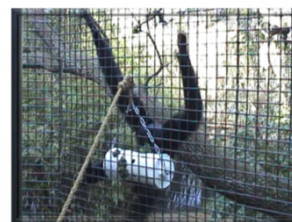
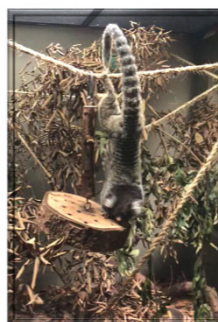


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Feeding Devices

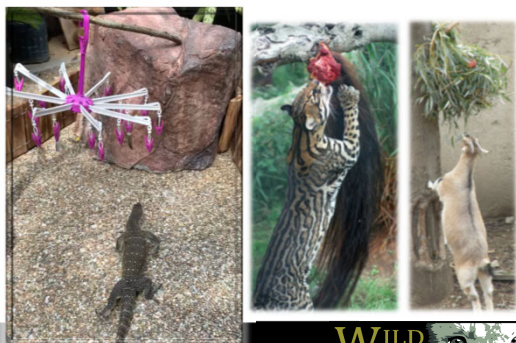


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Hanging Food



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Food Puzzles



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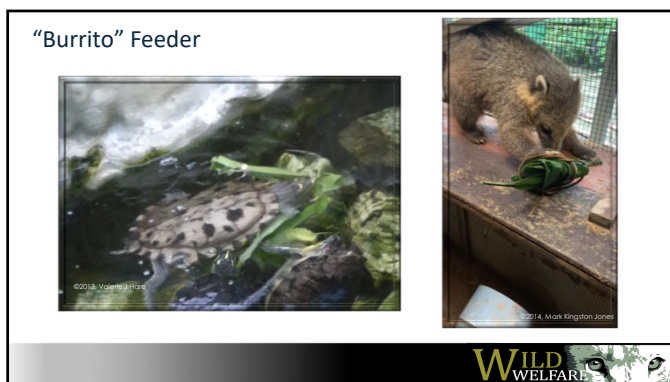
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Novel Food

- ❖ Investigatory Value
 - Physical, mental
- ❖ May not be Consumed
 - Nutritionally unimportant
 - Delete calories from diet
- ❖ Novelty Important
 - High latency



Offering dietary food in an appropriate manner can be one of the most important enrichment options for any animal caretaker!



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Golden Opportunities

- ❖ Every bit of food is an opportunity to enrich and/or train!
- ❖ DON'T WASTE IT!



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Conclusion?



THROW OUT THE BOWLS AND TRAYS!



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