

## Enrichment: Introduction, Definitions, and The 5 Categories

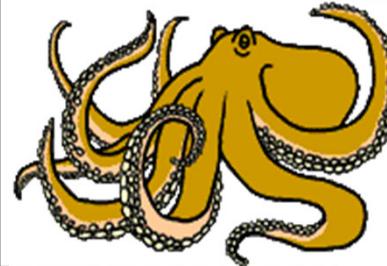
Margaret Whittaker  
Wild Welfare US



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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:

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

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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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### Conspecifics 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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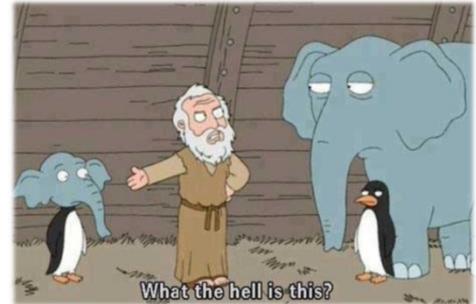
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CAUTION . . .



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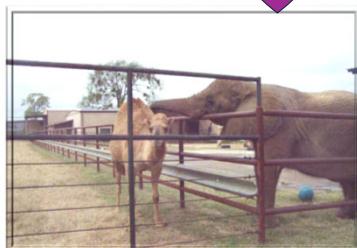
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Special Needs



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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**

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Joy of Learning

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## Puzzle Feeders



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### Problem Solving and Learning



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### 3. Physical Habitat



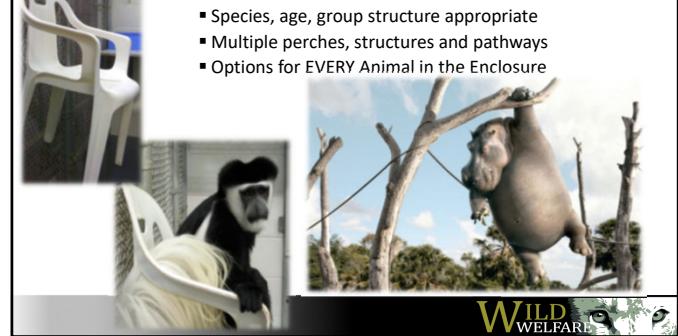
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### Furniture and Pathways

- Species, age, group structure appropriate
- Multiple perches, structures and pathways
- Options for EVERY Animal in the Enclosure



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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



Photo credit: Debbie Ng

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**Diameter**



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**Textures**

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Terrain, Elevation, and Placement



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Flexibility: Live Branches

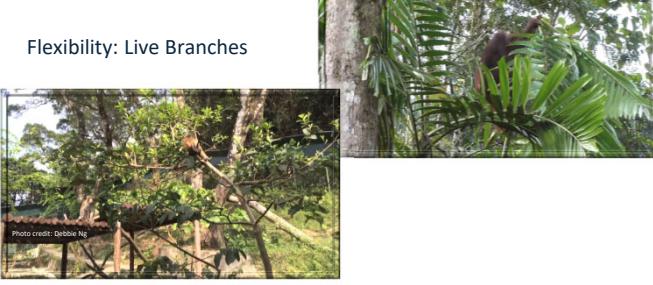


Photo credit: Debbie Ng

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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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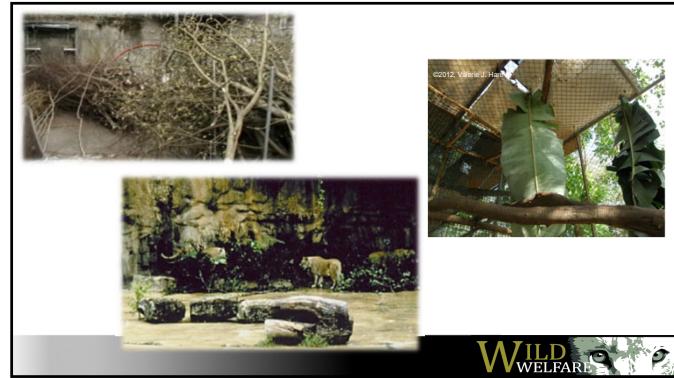
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### Partial Visual Barrier (PVB)



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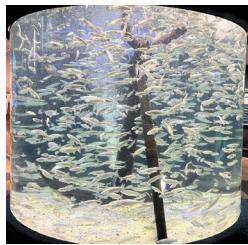


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### Direct Site Lines and 360°Public View ↓ Welfare



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### Total visual barriers can be too much



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### Substrates

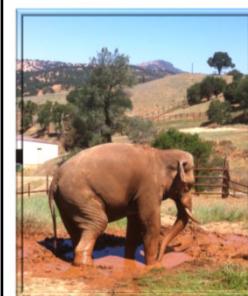
- Options for everyone in the enclosure
- Varied



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### 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

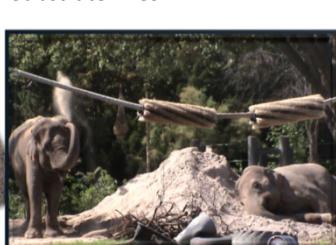


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### Substrate vs.



### 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 cage top 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

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**Enclosure Extensions**

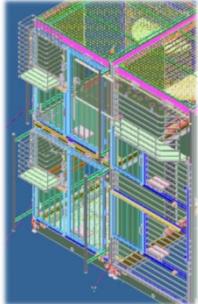
- Aerial and terrestrial walkways
- Pop Outs



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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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The Joy in Destruction!



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Texture: Brushes, Rope, Burlap, Astroturf



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Got to Scratch Those Itches!!!



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Manipulanda: Burlap,  
Tree Bark, Paper,  
Feathers, Buoys



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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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Noisemaker: Bell, Rattle, Chimes



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#### Olfactory/Taste

- Feces and urine
- Fur/hair
- Perfume
- Scented vinegars



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#### Olfactory / Taste:

Vanilla Extract, Pinecone, Peppermint Extract, Nutmeg



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- Electric
- High/ Low frequencies



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#### **5. Feeding Enrichment**

- Presentation
  - Whole or small
  - Frozen
  - Location
  - In device
- Variety and Novelty
- Frequency



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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-freeloading"



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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!

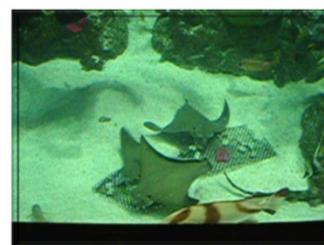


1. Recognizing Food
  - Scents
  - Sounds
  - Visual
2. Finding Food
  - Following a scent trail
  - Locating food in a maze or puzzle



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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



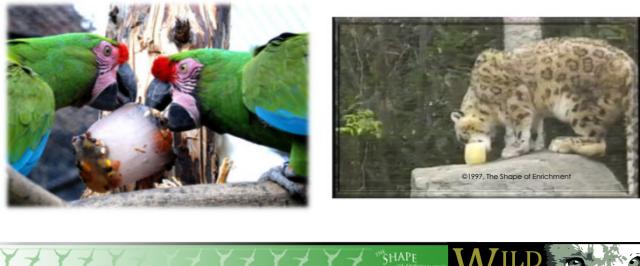
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Frozen – Item or In Something



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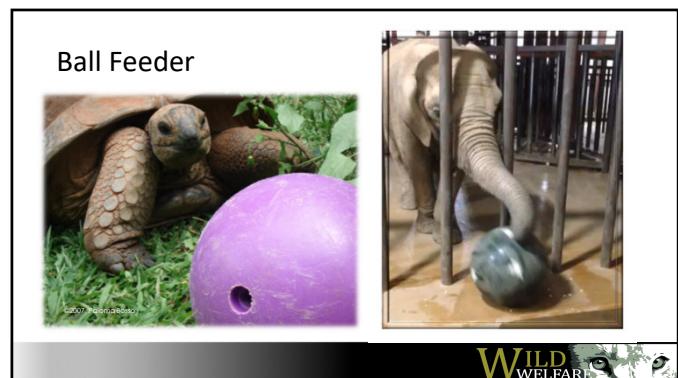
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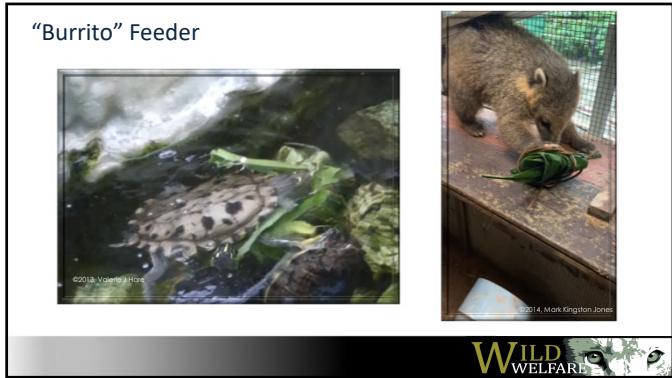
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Offering dietary food in an appropriate manner can be one of the most important enrichment options for any animal caretaker!



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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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