The goal of this enrichment portfolio is to provide easy guidance for the development of enrichment ideas that will improve bear welfare in captive situations.

Enrichment can enhance the zoo environment for an animal, encouraging them to explore and interact with their surroundings.

Enrichment also enhances the visitor experience as the animals show more natural behaviours and are much more active.

Enrichment is not a replacement for a natural exhibit and the best form of enrichment is to house them in a naturalistic environment. The best form of enrichment is a combination of natural features and an intensive enrichment program.

Choice – enrichment is about creating choices for animals so they are in greater control of their environment.

Change – while some enrichment requires regular changes, other forms need to be the same every day. Either way, variety is important.

Create – enrichment is increasing the complexity of the environment that is meaningful to the animal’s genetic and behavioural needs, is species relevant and addresses specific species needs.
Enrichment for Bears Can Be….

Olfactory – About different **SMELLS**

Gustatory – About different **TASTES**

Manipulative – About **INTERACTIONS** with the environment (within enclosure)

Exploratory – About **CHANGES** to the environment (within enclosure)

**Why is Enrichment Good?** Animals with good mental health will engage with their environment more, be less aggressive, less fearful and more peaceful. They are more exploratory and at ease with their surroundings. Enrichment can support this positive mental welfare and encourages natural behaviours in captive animals.

**What is Enrichment Not?** Enrichment is not a substitute for poor enclosure design, a poor diet, lack of health care or any other poor management activities.

*While enrichment is an important aspect of positive animal welfare, it alone cannot compensate for sub-standard care.*
Enrichment encouraging species-specific behaviours. Any enrichment given should have target behaviour(s) in mind. Foraging is the easiest behaviour to encourage and it is the behaviour that bears would spend the most time doing. Making the bears ‘work’ for all of their diet and not get anything free is the best way to increase natural behaviours throughout the day.

**Bear Natural Behaviours**

The key behaviors to encourage in bears are:

- **Exploratory/Foraging**
- **Nesting/Rolling**
- **Olfactory (smelling and marking)**
- **Grooming/Rubbing/Scratching/Bathing**

**Animals Considered for this Enrichment Portfolio**

- Brown (Grizzly) Bears (Ursus arctos)
- Black/Asiatic Bears (Ursus americanus/thibetanus)
- Polar Bears (Ursus maritimus)
- Also possible for Sun bears (Helarctos malayanus) and Sloth Bears (Melursus ursinus)
Always consider the safety of the animals and keeping staff before embarking on an enrichment programme

- Bears can become entangled in ropes, chains and other hanging apparatus – ropes and chain must be covered in smooth tubing such as hose

- Bears can fall while trying to reach enrichment placed high up

- Dietary enrichment consisting of inappropriate bear foods can lead to tooth decay, obesity, allergic reactions, impaction, diarrhoea, choking or aggression from cage mates

- Some items, or pieces of them, may be toxic or hazardous if ingested - bears that have not been exposed to enrichment items before must be slowly introduced to new objects over a few weeks and carefully observed

- Objects, if broken, can produce sharp edges that can cut animals

- Stimulating enrichment may increase aggression or harassment by cage mates if there are not enough enrichment objects for each bear – there must always be enough enrichment objects for each bear so as to reduce competition

- Plants or parts of plants may be toxic to animals. Prior treatment of plants with pesticides or fire retardant chemicals can be toxic – thus all plants must be assessed for natural or mad-made toxicity

- Adding enrichment (items) may put a keeper in a compromised situation if the appropriate due diligence isn’t followed. Ensuring the safety for both staff and animals is paramount.

- Dietary enrichment may result in the animal not eating important nutritional components of its regular diet – enrichment foods must also be included within the main diet – this avoids the pick and choose feeding leading to a reduction in nutritional main food diets

- Parasites may be transmitted through food – all foods must be assessed for likely parasitic activity
Avoiding aggression is important when providing enrichment. Providing enrichment will stimulate the bears. If not enough enrichment is provided for ALL the bears, this can lead to aggression.

**It is important that enough enrichment items are provided for all bears.**

**How?**

*Providing enrichment in a number of different areas of the enclosure*

*Providing enrichment regularly and often*

*Ensuring different enrichment tools are used simultaneously, for example food and infrastructure enrichment can be used together*

*Remove any enrichment that causes injuries*

When first introducing enrichment to bears it needs to be done slowly. New items need to be introduced over several weeks at a time to avoid fights or nervousness. When introducing new items there must be enough for each bear to avoid competition.

Consideration must be given to the age of the bear. Old bears may be arthritic or have tooth problems, while young bears who have been removed from their mothers early will still be relatively unsteady on their feet. Consider enrichment that accommodates age appropriate needs.

Consideration must also be given to social groupings. If bears are held in large groups, enrichment may stimulate aggressive or dominant behaviours. Careful observation can ensure enrichment is given or removed at appropriate times.

Enrichment should be given to ALL bears. Bears not on display or in quarantine will especially benefit from enrichment due to their confinement. All enrichment outlined below can be used for these bears too.
Enclosure Essentials

**Three Dimensional Environment** - Platforms and logs allow bears to climb, rub and explore

**Soft Substrate** – allows bears to roll and rest

**Sufficient Water** – allows bears to cool down, bath and play

**Hides** – bears like to be able to retreat from public view of the public at times and also from each other. Man-made hides or giant logs and boulders are essential for this purpose.

**Multiple Feeding Options** – ensures bears explore, reduces boredom and uses of all their enclosure – bears should receive 3 feeds through the day. Scatter feeds can be thrown in regularly.

Above: Bears enjoying natural environments and deep, clean water at Bear Mountain, Hokkaido Kamikawa, Japan

Photo: The North Carolina Zoo
Enrichment Choices

Enrichment choices in order of importance:

- Food and Food Presentations
- Substrate
- Novel Objects (Natural)
- Novel Objects (Unnatural)

All of these include NO EXTRA COST choices and can easily be included into a daily routine.

Substrates

Behaviours it encourages
- Foraging for food
- Grooming
- Exploratory

Variations
- Soil or mulch can be used as a permanent base substrate. Piles of leaves, mulch, shredded paper and straw can be added on a regular basis.
- Make sure the substrate is deep enough for the bears to roll in and encourage digging by hiding food stuffs.

Notes
- Keeping the substrate to a corner of the enclosure means it is easier to clean up.

Types of Substrates:
- Grass clippings
- Leaves
- Mulch
- Sand
- Soil
- Shredded paper
- Straw/Hay
- Wood shavings/chips
Novel Objects - Natural

Behaviours it encourages

- Foraging for food
- Exploratory
- Grooming/Rubbing/Scratching
- Smelling/Marking

Variations

Decomposing logs with bugs in them can be used to encourage foraging.

Large permanent logs are good for climbing and grooming, while smaller piles of logs work well for hiding foods in them, and can be regularly changed.

Hanging ropes, sacks filled with scented straw and food encourages exploration.

Notes

Keep an eye out for very sharp branches that may cause injury. Remove if seen.

Novel Objects (Natural):

- Large logs
- Rotting logs
- Pine tree
- Piles of branches
- Ropes
- Swings
- Log feeders
- Hessian sacks
- Natural smells (urine/droppings from other animals)

NO COST

Logs from surrounding forest

Pines, branches, browse, natural smells

HOT TIP: Use decomposing or fresh logs. Throw in a pile or strap to climbing frame for added climbing infrastructure

Large boulders and trees provide a natural environment at Bear Mountain, Japan
Right: A tree stump with a stone in it, which the bear has to remove to reach food (*Four Paws International*)

Below: Simple piles of logs can encourage exploration and play

Below: Old and rotting tree stumps and logs can be used to enrich an environment, the North Carolina Zoo
Olfactory - Scents sprayed around enclosure

(Bears primary sense is their sense of smell)

Behaviours it encourages
- Exploration
- Scent marking/rubbing
- Rolling

Variations
- Different smells such as perfume, poo, body sprays, herbs, spicy powders etc can be used
- Urine or droppings from other species can be used (check with vet before use)

Notes
- Some scents will need watering down – always check for toxicity of products used

Behaviours it encourages
- Manipulation
- Reaching/Pulling
- Exploratory
- Foraging
- Rolling

Variations
- Open or tied up
- On floor or hung up
- Containing substrates, scents or food

Notes
- Be careful about what is used to tie up the open end of any bags

Foraging - Paper/Hessian sacks

Use old food sacks and fill with scented straw, and dried fruits – it’s fun to watch bears investigating and pulling apart. (Yorkshire Wildlife Park)
Foods and Food Presentation

**Behaviours it encourages**

Foraging

Exploratory

Playing

**Variations**

Scatter, hang or hide food to encourage foraging

Use substrates (e.g. pile of leaves) to hide food

**Notes**

Ensure foods are presented in a number of different places when given to large groups of animals to avoid competition and aggression. There must always be enough for each bear and must be reachable by all bears

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**Types of Food presentation:**

- Food in Ice buckets
- Food hidden in logs
  - Food hidden in cardboard boxes
  - Spreading food on logs
  - Hanging food on rope
- Food hidden in Hessian sacks
- Food hidden in substrate
- Kabocha/Pumpkins hung up

**NO Cost**

Donated jars of honey, peanut butter, yogurt

Hiding food in holes in logs

Iced food in buckets

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A bear investigating a log filled with straw and food at the North Carolina Zoo
Boxes with food substrates

Fantastic visitor attraction Use old cardboard boxes and fill with straw and small food items hidden in the straw. MUST always include a food source in the lunch boxes and lunch bags – otherwise the bears will eat the paper/cardboard.

Variations
Sticks or mesh across the box to restrict ease of exploration
Hung up or on the floor
Add smells to the box
Leaves, straw, shavings (or empty)

Notes
Buckets hung up also work well

Ice Pops

Fantastic visitor attraction – easy to make and particularly good during the summer. Simply place fruits or other foods in water and freeze over night.

Behaviours it encourages
Manipulation
Reaching/Stretching/Gnawing
Cooling Down

Variations
Blood pops for carnivore species (or fish blocks)
Add seeds/fruit pieces or natural flavour such as orange juice or yoghurt

Notes
Freeze with rope in middle to hang up more easily.
To avoid competition make one for each bear within the enclosure.
All bears love pumpkins. Kabocha can also be used. Cheap and easy to add to the enclosure. Visitors can get involved by carving their own shapes into the pumpkin.

**Behaviours it encourages**

- Manipulation
- Investigative
- Hiding inside

**Variations**

Can be hung up/used to hide other food inside.

Whole watermelons also very effective

Coconuts can also be used

**Notes**

Monitor how much is consumed
Drilled Logs, Pit Falls, Honey and Peanut Butter!

**NO COST!** Dig a shallow hole in your substrate and add food. Cover with leaves/twigs/branches. The bears have to “fish” for the food!

**NO COST!** Spread honey or peanut butter on logs around the enclosure to encourage foraging and exploration!

**NO COST!** Drill holes into logs and fill with honey/yogurt/kibble. Place in enclosure and watch the bears lick out the treat!

Drilled holes filled with honey. Wildlife SOS Agra Bear Sanctuary, Bear exploring tire stuffed with straw and treats at the North Carolina Zoo, Top left – Bear exploring hollow log with straw, the North Carolina Zoo.
Novel Objects - Unnatural

Behaviours it encourages
Exploratory
Playing

Variations
Scatter, hang or hide food to encourage foraging and climbing
Offer plenty of options to avoid competition

Notes
Ensure objects are removed if being eaten.

NO COST
Empty food bags (Not Plastic)
Donated deodorants
Donated tires
Pre-used barrels, old buckets and used boots

Novel Objects (Unnatural)
Barrels
Tubes
Buckets
Drain covers (heavy duty plastic)

Feathers
Boomer balls
Boots (Steel toe and insoles removed)
Man-made smells (perfume/deodorant)
Tires
Drums
Traffic cones
Nylon net
Fire hose toys
Old footballs (Boomer balls are better!)
Simple Platforms

Behaviours it encourages
Allows bears to get off the ground
Gives the bears the ability to smell their surroundings
Manipulation/Exploratory
Foraging
Rolling/Resting

Variations
Placing food on different levels
Adding car tyres to swing on
Adding scents to different levels

Notes
Ensure they are built well and are sturdy enough to hold a number of bears at one time

Water - Barrels

Behaviours it encourages
Manipulation
Reaching/Stretching
Cooling Down

Variations
Treats that float or sink
Rafts/barrels on water

Notes for Water Baths
Be careful of the depth of water in relation to size of animal. Always provide a way out of water using rocks to create natural ladders.
Tires

Behaviours it encourages
- Manipulation
- Investigative
- Playing

Variations
Just add to enclosure for play or hang by a sturdy rope

Notes
Ensure ropes are secure to avoid breakages. Cover with plastic such as a hose to avoid accidents.

Fire Hose Hammocks

Behaviours it encourages
- Climbing
- Exploratory
- Resting/nesting

Variations
Use to hide food in or as climbing/resting equipment

Notes
Clean and check for ware and tear regularly to avoid breakages that may cause injury.

Hot Tip!
Hammocks attached to other climbing frames create a 3D moving environment for the bears to explore and fun for visitors to watch!
Bottles/Barrels

Behaviours it encourages
Manipulation
Investigative
Stretching/reaching

Variations
Holes for pellets/browse
Smeared treat at bottom of pot

Notes
Ensure holes are smooth. If made of plastic ALWAYS keep an eye on them to avoid ingestion.

Hanging Water bottles on sturdy chains encourage exploration and movement. Ensure enough are given so that each bear has an opportunity to explore. Visitors love to watch the bears investigate! (Photos: Yorkshire Wildlife Park)
Getting the Visitors Involved

As an alternative to public feeding, getting visitors and children involved in creating the enrichment tools is fun and interesting too! It also means keepers have a ready supply of enrichment opportunities and the visitors understand more about bear welfare.

**FUN & INTERACTIVE!**

Create Food Logs for the Bears

Provide small logs with pre-drilled holes in them. Give different food options that can be put in the holes by visitors (for example, honey, berries, peanut butter, yogurt, kibble). Show visitors how the logs are used to encourage natural behaviour in the bears. **OR** simple provide logs (without holes) that visitors can paste (Use flour or water paste which is non-toxic) different foods over (see above) for enrichment feeding. Visitors must NOT throw the logs at the bears.

Buy a Tube for the bears

Visitors can buy a simple cardboard tube and fill it with straw and a chosen food product mixed into the straw. For example grapes, kibble, berries. These tubes can be fed to the bears at specific times so the visitors can see them being used.
FAQ’s

The enclosure is quite small, how can I make it interactive?

• Although space is important, there are a lot of easy infrastructures and interactive objects that can be added to an enclosure that will positively stimulate the bears, as well as entertain the visitors watching them. A 3D environment can greatly increase the space of an enclosure immediately.

My enclosure has nothing natural in it, is this bad for the animal?

• Natural vegetation and substrate is important and can be simply added. However bears will also find unnatural objects (for example, fake tree logs, traffic cones, hanging tires) interesting and can be combined with natural products such as logs and piles of soil.

My enclosure is hard to access, how do I introduce enrichment?

• There are many enrichment tools on offer, ranging from different feeding opportunities to more permanent fixtures, such as large logs. Although regular changing of enrichment is important, tools can be rotated and changed when possible. For example when bears are brought in to hibernate, fixed enclosure infrastructure can be changed, while feeding tools can be more regularly changed. Scatter feeding is critical to daily enrichment and can be thrown in from the top of the enclosures.

The bears become more aggressive when enrichment is used – is this bad?

• Aggressive and dominant displays are natural, particularly for large groups of captive bears. However it is a concern and should always be taken seriously.

• All enrichment should be monitored and carefully observed, and different enrichment types will work better with different groups of bears. By offering a selection of different enrichment opportunities, you can limit the amount of aggression observed.

• Quantity is very important, there must be enough enrichment for all the bears as this will greatly reduce competition. Any food enrichment should be given in enough quantity so that all the bears can access it, otherwise aggression will occur.
Bibliography and Useful Resources

Animals Asia Foundation – Enrichment Programme CBRC Photo Library – Non-Food Enrichment Items and Enclosure Fixtures

Bear Enrichment Guidelines 2011 AAZK

Black Bear Enrichment – Abilene zoo

Enrichment at Bear Sanctuary Arbesbach – Four Paws

International Zoo YearBook: Enriching the lives of bears in zoos G.Law, A.Reid

Shape of Enrichment: Supplemental Carcass Feeding for Zoo Carnivores

Shape of Enrichment: The Homemade “Univerzoo” Ball

Shape of Enrichment: An Enriching home for Rescued Asiatic Bears Shape 17

Shape of Enrichment: Sun Bear Training promotes Well-Being Shape 6 (4)

Shape of Enrichment: Fire Hose Hammocks for Bears Shape 6 (3)

Shape of Enrichment: Foraging Encouragement for Bears Shape 2 (2)

Shape of Enrichment: Utilizing Young Visitors for Behaviour Enrichment