Orangutan Project
Enrichment Catalogue
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What is enrichment?

Environmental enrichment is defined as the process of providing captive animals with stimulating environments where they are provided with items and surroundings that encourage their naturalistic behaviours. Enrichment also allows them to have choices in and control over their environment, and provides them with an interesting space that inspires positive engagement.

The importance of enrichment:

Providing enrichment is a way to ensure that captive animals remain both physically fit and mentally healthy. Enrichment can achieve these outcomes by providing the animal with an environment that allows them to express natural behaviours and spend their time in as natural a way as possible, and to see their energy budget reflect that of wild conspecifics. An energy budget is merely a fancy science term for the proportion of time that the species spends engaged in each of its normal behaviours such as foraging, sleeping, playing, travelling, communicating through calls or scent marking and so on.

In most cases captivity places unnatural constraints on the animal and its ability to use its full cognitive capacity and display natural behaviours. If no effort is made to use environmental enrichment to compensate for the shortfalls of captivity the animal is likely to become bored and incredibly stressed as a result. When this happens the animal may begin to develop stereotypical and other abnormal behaviours as a way of coping with their mental anguish. Stereotypical behaviours are defined as repetitive behaviours that do not serve any adaptive function; common examples include pacing back and forward, head bobbing or flicking, and self-injurious behaviours. Once an animal develops stereotypies they tend to persist over time. However, providing an enriching environment often prevents these behaviours from appearing and can significantly reduce the incidence of these behaviours in individuals who have developed stereotypies.

Enrichment improves the physical and mental health of captive animals and as such is just as critical in maintaining good holistic health and welfare, as is good nutrition and veterinary care.

Types of Enrichment:

Enrichment can take many forms and can include the introduction of new items or structures into the animal’s environment as well as manipulation of their existing environment. Below are some examples of the types of enrichment. However the “categories” are loose and dynamic, and many forms of enrichment will overlap with or make use of others.

Structural Enrichment: Structural enrichment includes the enclosure design, platforms swings and climbing structures, as well as more temporary enrichment like swings and ladders etc. the aim of this type of enrichment is to provide the animal with a means of exhibiting natural forms of locomotion.

Object enrichment: Object enrichment includes the use of novel items that capture the animals’ interest and encourage play.
**Sensory Enrichment:** Like humans, animals experience the world via their senses, many of which are far more heightened in some species than they are in humans.

Each species will perceive the world very differently because each sense has its own importance and adaptive function. These senses will be heightened or diminished based on importance to that animal and how it interacts with its environment. For example, sun bears have an extremely good sense of smell because they use their nose to help them find their food, which is often buried under ground or in logs. Primates on the other hand are much more visually focused.

Therefore, when providing enrichment it is important to learn about the species to make sure that any heightened senses are stimulated.

**Food based enrichment:** Most animals are highly food motivated. Food is generally hard to come by in the wild and foraging/hunting behaviours will generally represent a large proportion of their energy budget. Therefore, presenting food in novel and exciting ways that encourage natural behaviours is a great way to stave off boredom and increase activity. For many species, food based enrichment can also be incorporated into puzzles and brain teasers that mimic the cognitive skills required to solve tricky food puzzles such as breaking into nuts, or extracting insects from their homes.

**Considerations:**

Enrichment must be well thought out and any risks must be mitigated by using the safest materials, practices and construction methods possible. Enrichment should also be regularly cleaned and disinfected if it is being moved between different enclosures. There is always an element of risk to providing enrichment but if the enrichment is carefully considered by trained staff this risk is small and is far outweighed by the benefits of enrichment. If rope or string is used to tie an enrichment item to the ceiling it should be secure to two different points on the ceiling in a v shape so that it does not present a choking hazard.

The enrichment items listed within have been successful with the animals in our care. We intend this document to act as a resource for us and anyone else caring for animals in captivity, so that we may share ideas in order to maintain the highest possible standard of care. We cannot take any responsibility for how our enrichment ideas are executed at other centres or for any freak accidents that may occur at other centres who use our enrichment ideas.
**Structural Enrichment**

Structural enrichment is the addition into the enclosure of semi-permanent or permanent structures that encourage increased activity, natural foraging behaviours, and natural forms of locomotion.

Some structural enrichment can be changed semi-regularly so that the animals don’t become too familiar with and lose interest in these items. Other types of structural enrichment may be more permanent structures, which can be used randomly and for different purposes so that the animal does not cease to engage with the item at all.

This type of enrichment provides animals with structures that make them more comfortable, and can encourage them to be more active and playful. Therefore, we believe good structural enrichment is the baseline for providing good captive care.
Platforms and climbing structures

Enrichment for: all species

Platforms are an essential form of long term structural enrichment for most species. Platforms can take many forms, from a simple ledge on which the animal can rest on off the ground to a tower with many levels that the animal can climb and play on.

Most species benefit from platforms for a variety of different reasons:

For the orangutan, climbing platforms are an integral part of the enclosure as they encourage the orangutan to play, eat and rest off the ground, which is far healthier for them than spending time on the ground where they are likely to come into contact with intestinal parasites much more readily. In addition to this, climbing platforms also provide a structure from which other enrichment items such as ropes and hammocks can be fixed. Hanging ropes between the platforms allows the orangutan to exhibit a natural form of locomotion as they can brachiate to get from one point to another, rather than having to climb down and walk along the ground which is a very unnatural form of locomotion for them.

As a predator avoidance mechanism as well as a way to survey their surroundings, sun bears and clouded leopards often rest in trees and thus platforms provide an important substitute for the vantage point which is offered thus.

It is critical that gibbons have either platforms or hammocks to rest in so that they are not sleeping on the ground. A captive gibbon who spends a lot of the time on the ground is at risk of contracting parasitic worms, which are commonly fatal in these animals, so effort must be made to make the top of their enclosure an exciting and comfortable place.
A water source is an essential part of any enclosure and where possible it should be presented in such a way that it also acts as a form of enrichment. Ponds and waterfalls are one such way to do this.

Not only do they provide the animal with drinking water but also with a means to cool off. Many of the animals like to paddle or submerge themselves in a body of water in hot weather. For some animals such as macaques this is a natural behavior. Other species such as orangutan, sun bears and clouded leopards may not always have ready access to a body of water in the wild. However, when housed in their habitat countries their enclosures will usually be hotter than their natural forested environment, thus a pond in the enclosure upholds basic captive care standards.

The orangutan, bears and macaques in particular seem to simply enjoy playing in the water. We have observed captive macaques submerging their entire bodies and then leaping out of the water in excitement. Orangutan have been observed playing by themselves, washing various items and splashing about in the water.
Hammocks

Enrichment for: Orangutan, sun bears, macaques, gibbons, clouded leopard, civets and binturong

Directions:
For use with Orangutans:
• The material of the hammock will need to be very strong. Fire-hose is the only material suitable for an adult male orangutan although a strong canvas may suffice for juveniles and females. Some orangutan also enjoy sleeping and playing in modified hammocks made by cutting large plastic drums in half.
• The hammock should be fixed in place with chain and fastened with U bolts outside of the enclosure, out of reach of the orangutan so that they cannot undo the bolt.

For use sun bears:
• Canvas hammocks for bears can simply be attached to the ceiling of the night dens with rope.

For use with macaques and gibbons:
• Hammocks can be created for these species by cutting a hessian bag in half long ways and attaching it to the ceiling of the night den using string.

For use with clouded leopards, binturong and civets:
• Thin rope can be woven together to create a hammock
• These rope hammocks can be fastened using U bolts

Variation for orangutan and bears: Plastic barrels can cut in half long ways to be used as hammocks. They should have holes drilled in the bottom of them to allow them to be washed properly. The orangutan may make a nest in these whereas the bears tend to just play in them.

Natural behaviours encouraged or benefits of this enrichment: All the animal species detailed above would tend to nest off the ground in the wild. Hammocks provide the animals with a comfortable platform upon which to rest and sleep. The hammocks also constitute a climbing structure. The orangutan and bears in particular like to sleep in hammocks; when resources are available they should always be provided in night dens areas.
Swinging Ladders

Enrichment for: Gibbons, macaques, birds

Directions:

• Search for small, relatively light-weight logs
• Select some thin light-weight rope and a drill bit of a slightly bigger diameter than that of the rope.
• Using a drill make a hole all the way through both ends of each log
• Cut a long piece of rope - it should be double the length you want your ladder to be - plus some extra slack to tie it to the ceiling.
• Feed the rope through both holes of the first log, this will be the bottom rung of the ladder.
• Pull the rope so that the length is equal on both sides.
• Tie a knot in each side of the rope and then feed each end of the rope through the next log (the knots stop the second rung from sliding all the way down the rope)
• Repeat these steps until you have the desired amount of rungs in the ladder. However, for the safety of the animals do not exceed 5 rungs as this would be substantial weight if it was to fall.
• Tie the ends of the rope together on the outside of the ceiling of the enclosure or night den.

Natural behaviours encouraged or benefits of this enrichment: ladders encourage the animals to move in a more natural fashion. I.e. instead of walking along on the floor the gibbons can use them to brachiate, the macaques to climb using their arms, legs and tails and the birds to climb using their beaks and legs. Swinging ladders and other semi-permanent climbing structures can be replaced or modified as needed (macaques tend to take such enrichment items apart quite quickly) or at least once a month so that the animal does not become bored with and cease to use the object.
Log climbing structures

Enrichment for: macaques, sun bears

When trees fall naturally or branches fall they can be sawed into useful sizes and used to create a variety of climbing structures. They are great to use for all arboreal or semi-arboreal animals as they are a natural structure and can therefore be utilised to simulate a natural environment.

Note for macaques: It is possible to bolt the longs together to make intricate climbing structures for the macaques, which simulate the resting places that are afforded by the branches of a tree.

Note for bears: logs are great for the bears; because they are a natural structure they make use of the climbing muscles they would be using in the wild. Long climbing structures can be used as a place to smear tasty food treats and as they are a natural substrate the bears will scratch at them and bite them to liberate any insects inside. It is also possible to suspend logs from the ceiling so that they move dynamically when the bear puts their weight on them. They bears will often lay on these logs and go to sleep in the same position they would in a tree, with the log running down the middle of their body and their legs dangling over the side.
Spinning PVC ladder

Enrichment for: macaques

Materials: PVC barrel, saw, bolts, rope, U-Bolt

Directions:

- Saw the PVC barrel into sections about 20cm wide
- Take three such pieces and drill a hole in the top and bottom of each piece
- Bolt the middle section to the top and bottom section. Do not tighten the bolt but rather weld it in place where it is still loose so that the sections can spin independently of each other.
- Drill a large hole at the top of the first section
- Thread the rope through the top of the top section of pvc.
- Hang the structure so that the lowest section is not touching the ground
- U-bolt the rope over the ceiling and to itself

Natural behaviours encouraged or benefits of this enrichment:
The macaques love this structure. Because each section moves independently they spend a long time jumping between the section and from the structure onto other things and back again. The young macaques in particular seem to use this play structure as a way of initiating play with conspecifics so often three macaques will be jumping all over the structure at once (which is why its difficult to get a photo of this enrichment in action).
Ropes

**Enrichment for species:** Gibbons, macaques, birds, orangutan

Ropes are an excellent form of in-situ enrichment. They can be hung in a variety of ways to create an endless amount of structures for the primates to swing and brachiate from.

Note for gibbons: hanging ropes vertically from the ceiling is great for gibbons as they tend to use them to brachiate fluidly from one to the other as they might with vines in the forest.

Below are some examples of ways rope can be hung:
Spinning barrel

Enrichment for: Orangutan, bears

Hanging Spinning Barrel directions for bears and orangutans:

- Take a large blue barrel and drill a hole in each end
- Drill multiple holes of various sizes around the circumference of the barrel
- Feed a piece of rope through the middle of the barrel and tie each end of the rope to strong existing structures.
- The rope will need to be fixed in place with U bolts and in the case of orangutan the bolts will need to be welded shut or fixed outside of the enclosure/night den.
- Small food items can be placed in the barrel through the holes and the animals must spin the barrel to get the food out again. Use dry food such as nuts or seeds, or in the case of the bears dog biscuits, so that if the animal is unable to get the food out it does not perish quickly.

Fixed Spinning Barrel directions for bears only:

- Take a large blue barrel and drill a hole in each end
- Drill multiple holes of various sizes around the circumference of the barrel
- Drill holes in the middle of each end and place a metal pole through the barrel
- Cut and varnish two hardwood posts to be used as uprights.
- Dig a hole roughly 2/3rds of the length of the posts
- Dig a second hole of the same depth
- Stand the posts up
- Attach the barrel to these two upright posts by drilling holes that the metal pole can slide through. Additional attachments are welded on so the pole cannot be pushed back and forwards by the bears

Natural behaviours encouraged or benefits of this enrichment:

This activity is a challenging one and requires the animal to persevere and manipulate the object to obtain high quality food rewards. In the wild orangutan would need to travel over vast distances in search of food and in many cases would need to manipulate the food item in some way to obtain the fruit or seed inside. Similarly sun bears spend vast amounts of time foraging and have strong jaws and claws and long tongues adapted for exploiting a wide range of food items that are difficult to get to such as termites and honey. The more time the animal spends engaging with and manipulating an object in order to get the food inside the more they are cognitively stimulated and encouraged to use their physical adaptations and natural behaviours.
Tyres

Enrichment for: sun bears, orangutan, macaques, gibbons

Materials required: tyres, 15mm diameter rope, U-bolts, power drill, large drill bit.

Directions:
The tyres can either be hung horizontally or vertically or a combination of the two. It is extremely important to work out which part of the tyre will be facing the ground and then use the large drill bit to make a couple of holes that water can drain out of. This is for hygiene reasons as it allows the tyres to be cleaned properly and also prevents the tyres becoming a reservoir for mosquitoes.

Ideas for gibbons: wheel chair or bicycle tyres are great for gibbons as they are lightweight and swing easily. Many tyres can be hung together and tied using the inner tube of the tyre. This will allow the tyre swing to stretch and swing in all directions.

Notes for orangutan: when secure tyres for orangutan the U-bolt must be fastened out of reach outside the enclosure or the orangutan will be able to easily undo it.

Natural behaviours encouraged or benefits of this enrichment:
Tyres can be used in a variety of ways to make fun and challenging enrichment structures. They can be used as a place to hide food as well as simply an item for the animal to play with. For the orangutan, gibbons and macaques, tyre swings offer a play item that they can swing and jump from. In addition to this if food is hidden in them it encourages the primates to climb and forage up high in search of their food. For the bears the tyres provide a challenging obstacle course between them and their food. They tend to climb up onto the tyres and thus have to support and stabilise their entire body weight as they would if they were climbing trees; therefore tyre swing structures can be a very good alternative if a forested enclosure is not available.