



## Levels of the Savannah



## Guide Book

## K-12 – Levels of the Savannah



What: 60 – 90 min tour of the Savannah building discussing the niches of the African savannah

When: can be done year-round

Backpack contents:

Program background information and tour for teachers

Biofacts and props for use on the tour

Zoo map – with recommended stops

Item checklist

Evaluation of the program to give in with backpack

To help you find the bits you want in the information, look out for the following:

Questions or activities are highlighted green.

Biofact/prop use is highlighted yellow.

Background information is highlighted blue.

## Biofact Checklist

<b>Item</b>	<b>Number of</b>	<b>notes</b>
Ostrich Egg	1	
Zebra fur block	1	
Giraffe tail hair	1	
Giraffe 3D model	1	
Giraffe tongue replica	1	
Lion claw	1	
Lion tooth	1	
Hyrax Skull	1	
Meerkat Skull	1	
Porcupine quills	1	
Hippo Tusk	1	

## K-12 – Levels of the Savannah – Zoo tour

Welcome to the Zoo! Thank you so much for trying out one of our “Backpack tours”. Everything you need for this program should be in this bag. Hopefully, you have time to look through this before you take the kids out on tour. We have included quite a bit of information and activity ideas. Feel free to pick and choose the ones that fit best for your group and your timeframe. We have highlighted the major stops if you are short on time. You must return ALL of these materials including this paperwork when you hand this backpack back at the end of the day. Enjoy your tour!



### STOP “A” – Zebra Amphitheatre

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#### Questioning:

Have the students look out across the savannah enclosure. How many different species do you see? Are they all living together?

How are they using the shared space differently?

Do you see any other interactions?

**ACTIVITY-** Look at the pictures of different areas in the savannah. Ask the kids how these different areas are going to be used by different animals.

**Biofacts** – **Ostrich egg**- ask the kids how thick the shell feels. Where do you think they get all the nutrients to be able to make such thick shells? Look at the pictures and their enclosure. What level of the savannah do you think they inhabit? Do you think it is easy to hide?

**Zebra fur-** **Look at the picture** of the zebra herd. Can you see all the separate zebras? How many are there? Why/how do you think it could be an advantage to all blend together?

#### Background Information

1. The savannah is a great place to look at the ways animals divide up their ecosystem to utilize different niches.
  - a. **Niche**- the role or function an organism occupies in an ecosystem. Where it lives and what it does (e.g. a wolf occupies the niche of a forest predator/carnivore)
2. Niche division can help to minimize competition for resources, and allows for an increase in biological diversity. By looking at the savannah in levels, we can group/separate animals based on which areas of the ecosystem they occupy.

## Questioning:

Are giraffes herbivores or carnivores? They are living beside other herbivores, so how do they reduce competition?

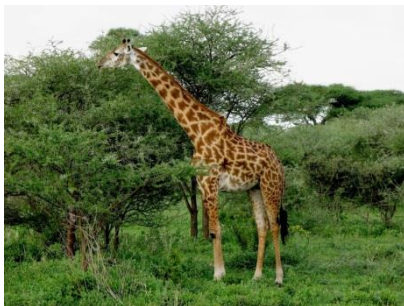
What adaptations do you see that allow giraffes to access a different niche than the other animals they live with?

Why would other herbivores want to live around giraffes?

**Biofacts** – **Giraffe model**- Feel the vertebrae in your neck. How many do you have? How many do you think a giraffe has?

**Giraffe tongue**- Stick out your tongue. Could you pick leaves with it? What colour is your tongue? Would the sun burn it if you left it out long enough?

**Giraffe tail hair**- if you were living outside with lots of bugs, how would you get them off your body if you had no hands?



## Background Information:

1. Other herbivores depend on groups of giraffes (known as towers) for protection. Due to their height, they are excellent lookouts and can give an early warning if any predators are approaching.

## STOP “C” – Lions

### Questioning:

What niche/role do the lions fill in their ecosystem?

What adaptations help the lions to be good hunters (both physical and behavioural adaptations)?

What do you think would happen to the vegetation if there were no lions? (HINT: think of what their prey eats)

**Biofacts-** Lion claw & tooth. Which do you think will be used most for killing?

### Background Information:

1. In the lion pride, there is an important hierarchy that determines who is the most important within the group, as well as who gets to eat first.
  - a. Male lions leading the pride will get their choice of meat first. They need large amounts of food to maintain their large bulk used to defend their territory
  - b. The females, who are the ones who do the vast majority of the hunting, get to eat second.
  - c. Finally, the young eat last. With no role within the pride, they are the lowest in the hierarchy.



### Activity- Spot the Lion

Using the pictures, try to see if you can find the lion hiding in the tall adrenaline grass. Why/how do you think lion would try to use this grass in the wild?

# STOP “D” – Rock Hyraxes

## Questioning:

What niche/role do these animals fill in the savannah ecosystem?

How do they avoid competition?

What animal are they most closely related to?

What other animal that you have already seen uses kopje rocks?

**Biofacts** – **Hyrax skull**. Look at the teeth on the skull. What do you think these animals eat? Make sure to look at all of the teeth, not just the front ones.

What feature on their skull links them to the animal they are most closely related to?

## Background Information:

1. Rock hyraxes live on Kopje rocks, feeding on the vegetation around their habitat
  - a. By living in a different location to the herbivores of the adrenaline grass and low grass plains, hyraxes avoid competition
  - b. Hyraxes also serve as an important prey species to many different predators

## Questioning:

What niche/role would elephants fill in the savannah?

What do you think would happen if there were no elephants or other large herbivores in the savannah? What would happen to the vegetation in the hot, dry, environment?



## STOP “E” – Meerkats

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### Questioning:

What niche/role do these animals fill in the savannah ecosystem?

Do you think they are predators or prey? Do you think they could be both?

**Biofacts** – **Meerkat skull**. Look at the teeth on the skull. What do you think these animals eat?

### Background Information:

1. Meerkats are very social animals, living in groups of anywhere from 20-50 individuals. While foraging, there is always one “sentry” on lookout. This sentry uses their keen senses to keep an eye out for any of their many predators. If the sentry spots a predator, it will call out causing the whole group to dive for the closest burrow to escape.
2. Some of their prey includes extremely venomous scorpions. They are actually immune to the venom of these scorpions, as well as that of some snakes.
3. Though they inhabit a low level geographically in the savannah (burrows), they fill a middle level in terms of the food chain, acting as both predator and prey.

## STOP “F” – African Crested Porcupines

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### Questioning:

What niche/role do these animals fill in the savannah ecosystem?

How do they avoid competition with other herbivores?

As herbivores, where do you think they would get the nutrients to help grow bones?

**Biofacts** – **Porcupine quills**. What do you think they use their quills for? How do they do this? What are they made out of?

### Background Information:

1. When threatened, porcupines will shake their quills, stamp on the ground, and even turn around and back towards their attacker. Their large quills act as a deterrent to any predator that is getting too close.
2. Though porcupines are primarily herbivorous, they will sometimes eat insects and small vertebrates. By using a different food source, they can reduce competition with other animals in the savannah.



# STOP “G” – Hippos



## Questioning:

What niche/role do these animals fill in the savannah ecosystem?

How do they avoid competition with other herbivores?

Look in the hippo pool. What do you see?

**Biofacts** – **Hippo tusk**. Based off of their large tusks, what do you think hippos eat? What else might they use their tusks for?

## Background Information:

1. Like many of the savannah ungulates, hippos are grazers, feeding on grasses around the river's edge. However, different to these animals, hippos are primarily nocturnal. Though they use the same level as many other animals, they reduce competition with others by using it at a different time of the day.
2. Hippos are considered a **keystone species**.
  - a. Their poop helps to fertilize the area they live in, providing essential nutrients to the plants that grow there.
  - b. Without their poop, many plants that grow in and beside the river would not be able to survive. This would, in-turn, provide less food and shelter for the animals that live there, eventually resulting in ecosystem collapse.
  - c. The Calgary Zoo played a part in starting the Wechiau Community Hippo Sanctuary, a community-based hippo reserve in Ghana. The sanctuary benefits hippos by providing protected areas for the animals while also bringing money into the community through ecotourism.
  - d. By protecting the hippos, the Wechiau Community Hippo Sanctuary helps to conserve the entire ecosystem that hippos play such a large role in.

## Activity- Hippo Competition

1. Bring two students up to be two male hippos
2. Male hippos are very territorial and do not like strangers coming into their homes. As such, when two males meet they will try to intimidate the other to leave. This starts out as a staring contest (have the students stare angrily at each other)
3. If neither male backs down, the two males will open their mouths (have the kids use their arms as mouths), interlock teeth (have them interlock fingers), and then they will wrestle (carefully!).
4. Whoever loses will be kicked out of the area. The winner on the other hand will assert his dominance over the other animals there. He will do this by wiggling his tail and pooping, thereby flinging feces all over the area and any other hippos that are nearby. This poop marks the hippo's territory and also acts as a fertilizer to many different plants.

## STOP “H” – Red River Hogs

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### Questioning:

What niche/role do these animals fill in the savannah ecosystem?

How do they avoid competition with other herbivores?

**Biofacts** – **River hog tail hair**. How do you think these animals use their tails? How does this compare with other animals?

### Background Information:

1. Males tend to have a more pronounced white “mask” around their eyes that is thought to be used for display purposes in the undergrowth habitats that they inhabit. The males also tend to have larger “warts” on their faces which are used to protect themselves from the tusks of other males during fights.
2. Red river hogs actually have two sets of tusks that are formed from the canine teeth. The upper set is very small and nearly invisible whereas the lower set can be as long as 18cm and are razor-sharp.

## STOP “I” – Baobab Tree (between hippos and meerkats)

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### Background Information:

1. The baobab tree acts as a great visual representation of the different levels within the African savannah.
  - a. From the roots where meerkats burrow to build their homes, through to the trunk where herbivores graze and predators stalk, all the way to the canopy where the giants of the savannah browse, the baobab spans all the niches of this ecosystem.
  - b. While no part could function alone, together they form a great community that can support an abundance of life.