

Ifa Lemvelo

The Newsletter of the Natural History Museum
of Zimbabwe, Vol. 1 No.9; 2019



**In this issue!!
Marvellous Microbes of Planet Earth**

**Camouflage: An impressive animal
survival skill**

Meet the staff

+263 29 2250045

natmuse@netconnect.co.zw

www.naturalhistorymuseumzimbabwe.com

Natural History Museum of Zimbabwe

Offices at: Centenary Park, Corner Park Road &
Leopold Takawira Avenue,
Bulawayo

Regional Director's message

Welcome to this issue!

Finally, we have managed to secure some solar panels for the gallery lights for the museum. However, due to the huge extent of the galleries we are far short of our requirement but at least visitors can now see their way around all the galleries when ZESA unfortunately switches us off. We thank you all for your patience on this matter, we will continue to work on adding more panels to the system. Hope you enjoy our newsletter where we talk about the hidden creatures in our wonderful museum and introduce you to a "natural" National Monument.



Entrance fees

Locals: Adults RTGS \$20
Children (5-14yrs) RTGS \$7
SADC Countries: Adults USD\$7
Children (5-14yrs) USD\$5
International: Adults USD\$10
Children (5-14yrs) USD\$5

The Museum is open daily from 9am-5pm

Events!!!!

KNOW YOUR SCORPIONS

for kids

FEE: RTGS\$25 **AGES:** 7 TO 14 YEARS

JOIN THE MUSEUM CLUB FOR AN INTERACTIVE CLUB MEETING

AT THE NATURAL HISTORY MUSEUM

ON 30 NOVEMBER 2019

FROM 9 to 11 AM



WITH DR M FITZPATRICK ARACHNOLOGIST!!!

To learn more contact Rays Trust on +263772933071

www.raystrust.org.zw



At Museum every Wednesday at 1pm

- | | |
|-------------------|------------------------------|
| 13 November:- | The Eagle's Nest |
| 20 November:- | Hitler's Island Megafortress |
| 27 November:- | Lightning War Machine |
| 4 December:- | Hitler's Killer Subs |
| 15 January 2020:- | Pacific Megaships |
| 22 January:- | Japanese Superfortress |

All welcome

Free entry

Donations accepted

naturalhistorymuseumzimbabwe.com

Camouflage an Impressive Animal Survival Skill

By Violah Makuva

As one walks around the bush one may unsuspectingly stumble on a snake or fail to notice a butterfly on a flower, a lizard on a rock or a mantid on a twig. This is because these animals camouflage themselves so that they remain undetected in their environment. Camouflage is a type of colouration or pattern that helps an animal blend in with its surroundings and is a useful survival strategy that animals use to stay alive and safe. Both predator and prey animals use camouflage to their advantage. Many animals are cleverly camouflaged or can move very quickly to escape from their enemies. Predators blend in with the background so their prey will not see them approaching until it is too late. Prey animals need to blend with the environment so that the predators will pass right by them without noticing them.

The Natural History Museum galleries consist of very spectacular and fascinating displays depicting various forms of camouflage in the different animal groups. Camouflage, also known as cryptic colouration, is the most commonly used where the animal matches the colour of their surroundings. Most of the displays are showing animals in nature and this cryptic colouration is present in almost all these displays.

Some animals have the ability to change colours and patterns to help them blend in with surroundings which is called "active camouflage". Chameleons have been called masters of camouflage as they have the ability to completely change their colours and patterns on their bodies for different reasons. These include helping to regulate their body temperature, sending signals to other chameleons and showing their mood, but the colours and patterns can also help them blend in with their surroundings.



Certain types of octopuses can change the colour and pattern of their skin by controlling the size of their cells. Some animals change their colours with the seasons which helps them blend in with the environment at different times throughout the year. This is a type of active camouflage known as concealing colouration. The Arctic hare and Arctic fox grow different coloured fur depending on the season. In the Arctic hare the fur is brown or grey in summer to match the surrounding foliage and the fur is white in winter to blend in with the snow. The mammals "moult" is merely a replacement of fur not a change of skin as in amphibians and reptiles and can take weeks or months to grow and replace.

The flatfish and the stonefish can alter their colouration to blend in with the surrounding sand and rock formation. Background matching allows them to lie on the bottom of the seabed without being spotted.

Disruptive colouration is camouflage where animals and insects use more than one colour to help them blend with their surroundings. Some toads have spots which are green and brown patches helping them to blend with the muddy mossy environment they live in. Asymmetrical shapes on animal bodies can help break up the outline of the animal. The black and white stripes of a zebra create a disruptive pattern that is confusing to predators especially as they move as a herd.



Disruptive eye mask colouration is a where there is a band of colour found on the bodies of birds, fish and other creatures that conceals the eye which is usually easy to spot because of its distinctive shape. The owl butterfly has what looks like owl eyes on its wings making predators think they are staring at an owl's face instead of the rear of a butterfly.



Spots on the leopard help it disguise the outline of its body especially when it's sitting in the shadows. On the savanna grasslands in the dry season the spotted coat of the leopard blends with the bleached tall grass. The greater sage grouse prefers to nest among tall sagebrush and its colouring helps it blend in with its habitat. The pattern of the sea turtle helps it blend in with the pattern of the sunlight reflecting on the ocean floor.

Another form of camouflage is mimicry where animals make themselves look like other animals that are more dangerous and otherwise less appealing to predators. Mimicry is most common in snakes, butterflies and moths. The scarlet king snake which is harmless has evolved to look like the coral snake which is highly venomous as a way to avoid danger. Butterflies mimic other species that are poisonous to predators. In both cases the animals' deceptive colouration helps ward off other creatures that are looking out to make them prey.



There are two display cases showing "Camouflage" in the Invertebrates Gallery exhibiting the variety of insects that camouflage on the tree barks, leaves, grass, ground and rocks. These insects include longhorn beetles, moths, grasshoppers, mantids and stick insects. These cases as well as some others in the gallery have an artistic background of the natural scenarios and attached natural vegetation material showing various forms of camouflage. Real insects are then superimposed to the painted walls or attached to the vegetation to show the camouflage.



Disguise is a type of camouflage where an animal takes on the appearance of something else in its environment. Insects disguise themselves as leaves by their shading and body forms and Leaf insects imitate the contours and colour of leaves in a surprising way. Many bugs, mantids and stick insects resemble twigs. The elongated stick insects resemble dead twigs by their folding of the legs along the body, presence of spines and the lack of movement which reinforces the illusion.

Research has shown that animals that rely on camouflage can choose the best places to conceal themselves based on their individual appearance. In research on nightjars it was concluded that it is not yet clear how these birds could individually choose places to suit their appearance to nest and evidence suggests that the birds must have a sense of self knowledge and of how they relate to their environment. Colouring and pattern of the nightjar make it difficult for the predator to see it while it is in the nest.

Camouflage in its diverse nature in the animals presents such an incredible experience in understanding nature and biodiversity as it is a character found across all animals all for the same purpose of survival in the predator-prey relationship. Camouflage is a useful adaptation which allows both the predator and the prey to survive. The prey can escape the danger of being eaten while the predator can acquire its food to survive. This helps in maintaining the balance of nature and conserving biodiversity in its totality.



During the tour of the Natural History Museum camouflage is a prominent feature in the natural history displays and one needs to pay close attention to the details in the displays to uncover the many hidden animals. Even in the live snake displays some of the snakes are hard to see. It is also interesting to note that there can be similarity of camouflage between different animal groups such as in the case of a caterpillar that looks like a gaboon viper. In a rushed visit though the museum you will miss out on this edutainment. We hope this will encourage to you spend time in the galleries pondering the wonders of nature and help to enhance your next visit to the museum.



The Marvellous Microbes of Planet Earth - Part 1

By John Minshull

Microbes are “animated matter”; *ie* - are alive and can move from A to B under their own energy. They are extraordinarily tiny, invisible to human eyes, except through powerful microscopes such as the electron-microscope that uses electricity, (electrons) as the source of illuminating radiation for objects measured in microns. A micron is one millionth of a

metre in length! Our microbes, in this nano-scale are around 1 to 10 microns (μ) in size. Photographs are recorded but the identification and study of these little cells' biology are done in specialised chemical and genetic laboratories. Microbiologists are the specialist scientists involved.

Where do we find microbes? Well, everywhere! In fresh water, salty oceans, in soil, clays, rocks, sand – wherever there is moisture. No moisture, no microbes – this appears to be the main limiting factor in their lives. They are present in very hot conditions (over 100°C) and in cold snow and ice, way under 0°C . Microbes reproduce by simply splitting in half, approximately every 20 minutes or less! Thus they live a very fast life by our standards. This leads to one of their great strengths as an organism on Earth – an incredibly rapid, exponential rise in population numbers from 1 to 2 to 4 to 8 to 16 and so on – millions and trillions upon trillions in a week or so. You can realise the impact they must have on the ecosystems they inhabit and this is what I hope to show and explain to you.

There are at present, two types of microbes, the Archaea and Bacteria within the same size range but structurally fairly different from each other, forming the Prokaryotes. Amongst the Archaea there are more extremophyles (love extreme conditions of heat, salt or cold or lack of oxygen *etc*) than in Bacteria. Thus it is thought Archaea evolved before them sometime during the Hadean Era (hot as hades) of early Earth. Fossil bacteria, stromatolites, are found in Zimbabwe, South Africa, Canada and Australia, are radioactively dated by a mass-spectrometer at about 3.8 to 4.0 billion years ago. Stromatolites in Zimbabwe are found at National Monument Turk Mine (declared a National Monument), Zvishavane (2.7-3.7 billion years old) and Mushandike. These cyanobacteria photosynthesised liberating oxygen and began the process that resulted in the Earth's atmosphere.

Microbiologists and chemists have discovered that microbes contain incredible chemical laboratories directed by their genes (DNA). Today they find new microbes by merely collecting samples of water from all over the Earth (in oil fields, deep under sedimentary layers in seas *etc*) and diagnosing the genes. This is called “shotgunning” and has led to hundreds of new microbial species and chemicals for new antibiotics the world over, and microbiologists are now in demand. From it all, hopefully, we will learn a lot more of the ecology of these tiny creatures.



Meet the staff: Charity Ndlovu

By Phineas Chauke

Born Charity Ndlovu as the 3rd of 5 siblings (4 girls and 1 boy), she grew up a reserved child with not so many friends. Cha', as she is affectionately known in family and social circles, had an unquenchable thirst for reading, discovery and adventure. Little did her family know that her passion would grow and influence her career choice. Being a Bulawayo girl, Charity attended one of Bulawayo's most renowned historical schools, Mzilikazi High School. Now she is married with 2 gorgeous daughters and a very young son.

Being a brilliant scholar, Charity enrolled with Midlands State University where she was part of the pioneer group of students to study a tri-packed heritage program - Bachelor of Arts Honours Degree in Archaeology, Cultural Heritage and Museum Studies from 2004 to 2008. For her first degree research she specialized in Archaeology where she ventured in ceramics analysis.



This integrated qualification landed her a job, which saw her start her career with National Museums and Monuments of Zimbabwe as an Assistant Curator of Archaeology at the Military History Museum in Gweru in 2009. She worked on several projects including the restoration of Danan'ombe National Monument and also worked with communities in heritage development impact assessments. She produced story lines, developed and assisted in mounting of several temporary exhibitions at the museum and outside including an award winning exhibition at the Gweru Agricultural show in 2011.

In 2012 she ventured in the deep and undertook a major restoration project at Naletale National Monument. She commenced her Master's Degree in Heritage Management with the Midlands State University in 2013 and completed it in 2015. Her Masters research focused on conservation of dry stone walled monuments. "My Masters research was an evaluation of the major restorations which were done over a long period of time at Naletale National Monument. The need for this critical research was birthed during one of the major restoration projects at Naletale National Monument in 2014" Explained Charity.

The project was facilitated through the American Ambassadors Fund for Cultural Preservation. Juggling between books and co-managing this big project to see to its successful completion was a major achievement for Charity because not only did she excel in her research and ensure the completion of the project but she also discovered and applied her inner strength as she carried a pregnancy and gave birth to a healthy baby during the course of the project and masters research. She recalls the experience with a smile on her face and adds "This saw me receive a certificate of achievement and appreciation from the American Ambassador to Zimbabwe".

Her insatiable appetite for adventure saw Charity moving to the Western Region in 2016 to embrace bigger responsibilities. Here she experienced a new work environment which invigorated her desire to excel. Working in a new and exciting heritage setting with 3 World Heritage Sites birthed an interest in her to understand and apply her newly acquired knowledge from the Masters program on World Heritage Sites Management. This saw her attend World Heritage Forums and being selected ahead of many contenders to sit on the UNESCO National World Heritage Committee as one of the Cultural Heritage Experts. She was promoted to Curator of Archaeology in 2017 in recognition of her incredible work ethic and a plethora of research achievements.

Charity has traveled far and wide in pursuit of her passion. International fora that she has been exposed to include the Seminar for Intangible Cultural Heritage

in Beijing China 2017, UNESCO World Heritage Committee Meeting Bahrain 2018, Linking Culture and Nature, People Centered Approaches Seminar Zambia 2018 where she presented on Matobo World Heritage Management System, Transboundary World Heritage Management Seminar Cote D'Ivoire 2019 where she presented and was a part of the leaders of a plenary session on Victoria Falls World Heritage Site.

She took over the reins in the Archaeology and Monuments department in 2017 and spearheaded major projects including the current Rock Art Documentation project under the World Monuments Fund. This project has seen to a series of field works and massive rock art data collected in a short period of time. The project has also seen the department reach out to several communities in a bid to actively involve them in the management of this special yet delicate heritage.



Being the go-getter that Charity is, she capped the year 2018 with the Don Broadley Curator of the Year award in the bag as true testimony and recognition of her hard work and achievements during the year. "This award hyped my energy to achieve more" she reminisces.



Charity is aiming for the sky and she has the following to say on her plans. "As part of my future plans I am

in the process of laying a foundation for my PHD studies in Rock Art Conservation a new found passion that will see me do exploits in the field in the coming years. The PHD study process has been slightly slowed down in 2019 as it clashed with yet another exciting phase in my personal life as she carried her 3rd child".

Socially Charity is a lovely soul who gets along with colleagues. She respects everyone whether junior or senior and she is always wearing this affectionate smile. Within the 4 years she has been in the western region, Cha' has earned a place the hearts of many.

Did you know?????

.....that Barn Owls eat mainly mice and shrews and food is often swallowed whole - bits of fur and bone are then regurgitated (coughed up) as an owl pellet. Although they normally eat 4-5 rodents a night, they can catch up to 21 mice a night when feeding young ones.



Design and layout by P. N Tshabangu