

Ifa lemvelo



The Newsletter of the Natural History Museum Of Zimbabwe
Volume 2, Issue 2, Feb 2020



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Cover pictures courtesy of Charming Images



Natural History Museum of Zimbabwe is home to valuable research collections and is the best museum in Southern Africa, ranked fourth in size among the museums in Africa.

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Entrance fees

Locals

Adults RTGS\$20

Children (5-14years) RTGS\$ 7

SADC Countries

Adults USD\$7

Children USD\$5

International

Adults USD\$10

Children USD\$5

OPEN

EVERYDAY

9am-5pm

Events!!!!



From the Regional Director

Welcome to 2020!

As we settle into the new decade we are realising that the rain cycles have changed, day time temperatures are different and we cannot ignore the signs that climate change is upon us. Climate change provides a key opportunity for museums to become more socially relevant, not simply as a place to see and read about interesting things, but also engage meaningfully in the most vital challenge of our time. Many of the research staff at the museum are involved in climate change education action and research and our newsletters are one way of keeping you updated. We hope that you will enjoy our articles in this edition.

NATURAL HISTORY MUSEUM OF ZIMBABWE INVITES YOU TO OUR NEXT PUBLIC TALK

100 YEARS OF AVIATION IN ZIMBABWE

To celebrate this occasion, join us for a talk by Rob Burrett about the Silver Queen as we look over the crash site

5PM, THURSDAY 5th MARCH 2020

AT THE SILVER QUEEN MEMORIAL (Car Winnies Way and Fairbridge Way)

Please bring your own chairs.

There will be four stamps issued on 5th March 2020 to commemorate the 100 years of aviation in this country. The Silver Queen will be the local denomination. We plan to have a special postal box for commemorative covers at the memorial site on the day, so please don't miss this celebration event.

National Museums and Monuments of Zimbabwe MBIZO

Sign up your 7-14 year olds so they can come play while they learn every Saturday .

HERITAGE AND SUSTAINABLE DEVELOPMENT GOALS  National Museums and Monuments of Zimbabwe

SUSTAINABLE DEVELOPMENT GOALS  **TRAYS** SYMPOSIUM
14-16 OCTOBER 2020
CALL FOR ABSTRACTS

OPEN CALL

RAYS Trust and the Natural History Museum Invites abstracts in line with the theme above, particularly linked to goals 2, 6, 11, 12, 13 and 15 listed below. There will also be a competition for University students and young researchers. Abstracts are to be submitted through rays.trustzimbabwe@gmail.com by the 19th of February.

TALK TO US
+263772933071
rays.trustzimbabwe@gmail.com

Goal 2: Zero hunger
Goal 6: Clean water & sanitation
Goal 11: Sustainable cities & communities
Goal 12: Responsible consumption & production
Goal 13: Climate action
Goal 15: Life on land



Second call coming soon

SAFETY
ANNOUNCING A NEW PROJECT!!!
YOUR SAFETY IS IMPORTANT

We are excited to announce that we are upgrading the Natural History Museum's security system and working on disaster emergency plan for our staff, visitors, our building and collections. Thanks to the Prince Claus and Gerda Henkel Foundation for the financial support. The generous grant will cover staff training in responding to emergencies, installing fire protection systems, upgrading CCTV and alarm systems.

 GERDA HENKEL STIFTUNG 

DID YOU KNOW?

.....on March 21st, World Forestry Day or International day of forests is celebrated to raise public awareness about the values, significance and contributions of the forests to balance life cycle on the earth. The Chirinda forest display in the Invertebrate gallery is one of the largest invertebrate habitat diorama exhibits in the world (most are only 30 cubic in size). The Chirinda Forest was once 950ha of primary evergreen forests on the slopes of Mount Selinda, has a rich insect life and is with many rare or endemic species. Next time you are in the museum take some time to marvel at the attention to detail in this display and ponder on the importance of our forests.



Resuming This February at the Natural History Museum
Sign Up!!

LET'S PLAY WHILE WE LEARN ABOUT THE ENVIRONMENT AND OUR NATURAL AND CULTURAL HERITAGE

CHILDREN'S NATURE, HERITAGE AND OUTDOORS CLUB

FROM FEBRUARY 1: EVERY SATURDAY THEREAFTER 9 TO 1030AM AT THE NATURAL HISTORY MUSEUM, SIGN UP FOR 7 TO 14 YEAR OLDS AND GET MORE DETAILS
With a **STEM Career Guidance Component**

Are you interested in sparking an interest in science and the outdoors in your child? Sign up for this club!!

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It's more than meets the eye.....

Plastic is bad! Or is it?

By Tsitsi Maponga

Plastic is malleable, versatile, resistant to decomposition, buoyant, and cheap hence it is used in many sectors of production. The same properties that make plastic reliable are equally making it a “nuisance”. The world produces more than 300 million tonnes of plastics yearly, with nearly 150 million tonnes being used “once” prior discarding (single use). In 2010 about 275 million tonnes of plastic waste accumulated, exceeding the primary production of 270 million tonnes contributed by waste from preceding years. One may ask why are we accruing more waste than what we are producing? The answer is simple, plastic does not disappear it still exists elsewhere and probably in a different state.

There are many articles, journals and even reports on various forums stating how anthropogenic activities have increased plastic waste. A general conclusion is at least 80% of land-based plastic waste ends up in the oceans, with coastal activities contributing 20%. Many articles cover research on the effects of macroplastic pollution on aquatic and terrestrial organisms. Researchers have put so much effort addressing ocean statistics yet little knowledge is based on freshwater systems, which are the same systems that convey the plastic into the ocean! How then do we manage what has not been measured? (from the source to be precise). Some researchers have started conducting such research in freshwater systems which are important to humans i.e. rivers, wetlands, dams and sadly plastic is present in all these sources.

Considering the scant knowledge on microplastics in freshwater systems, what can be agreed on is: the fate of plastic isn't straight forward (land>river>sea), there are deposited along the way i.e. buried in the sand, sunk to the bottom of the river and degraded into smaller pieces.

What do we know about plastics on land?

Plastic waste originates from both adequately disposed (plastic that is put in the bin then transported to the dump site) and inadequately disposed (plastic put in the bin but somehow is lost along the way through wind or not carefully disposed) or littered plastic (deliberately disposing plastic in inappropriate places). There are a number of human influenced activities responsible for this waste namely: urbanization, industrialisation (textiles, food, machinery etc.), agriculture and many

other. Plastic exists in many polymer forms like; high- and low-density polyethylene (HD/LD-PE), polyethylene terephthalate (PET), polypropylene (PP), polystyrene (PS), and polyvinyl chloride (PVC). Each has its advantageous properties that make it difficult to control once inadequately disposed. Since plastic tanks are so common and people are aware of the predicaments, they have resorted to appropriate discarding, recycling or incinerating. Recycling has proven to be costly yet beneficial over years, incinerating has proven to be a problem with the release of noxious gases while discarding has shown to be way slower as more litter stacks up in the pathways and drainage systems.

Due to the awareness and buzz of plastic pollution countries like Rwanda, Kenya, Taiwan and many more have banned single use plastics. While this may be a good initiative what then replaces plastic and does this improve pollution? Single Plastics are now being replaced by reusable bags made of HDPE (another type of plastic) which are stronger and seemingly environmentally friendly. The life cycle of a reusable bag has not been studied and there have been cases of the bags being unhygienic because of the multiple goods packed in. Besides the multiple concoctions of contents being hazardous to our health, the bag shreds fibre every time it is washed, subsequently leading to microplastic pollution. Technology has allowed manufacturers to use plant-based material to produce biodegradable plastics. This however has been argued among people as to where precedence is given between land for food or land for plastics. Also using the land for polylactic acids (PLAs) in corn and sugarcane, there is need to add fertilisers and water which are two resources that strain the environment around us.

What happens if plastic pollution is not addressed effectively?

Plastics degenerate into smaller pieces of <5mm known as microplastics. There are manufactured to this size (facial scrubs and resin) or they disintegrate through one or a combination of these processes; microbial digestion, UV, water and air exposure, and chemical exposure. The mechanisms take short or longer periods depending on many factors like initial plastic size, type and processes there are exposed to. This does not mean nature has reversed pollution (out of sight out of mind!) rather we have polluted another dimension that is difficult to control. Microplastics intensify negative impacts associated with macroplastics and their increase in quantity increases

(mismanaged macroplastics) chances of the negative impacts. Microplastics are ubiquitous in nature are transported by various mediums (air and water). There have been records of microplastics being ingested and inhaled by aquatic organisms and humans. They cause false satiation, energy loss, reduced reproduction, and are carcinogenic (from leaching chemicals during degradation). Microplastics have surfaces that allow pollutants and other vectors to adhere on them. This makes the pollutants bioavailable when microplastics are ingested leading to possible bioaccumulation of persistent organic pollutants (POPs) increasing likelihoods of death in organisms.

Microplastics have been recorded everywhere including freshwater systems like rivers, dams and even bottled water. This means humans are at risk of ingesting these particles and may have detrimental impacts on our health.

What can be done?

Getting rid of plastic is factually impossible as it was introduced to reduce the use of other limited resources hence feasible solutions are centred around controlling their use.

Make use of the 3Rs: reduce, reuse, recycle, in that order. This may seem obvious but the order is crucial in minimising contact with plastic every day, consequently reducing the plastics that are inadequately disposed.

Improve on waste management: microplastic pollution is a result of plastic that has not been disposed appropriately hence investing in adequate waste management decreases pollution. Countries should invest in incineration technology that limits and filters the hazardous plumes. They could also increase use of recyclates to prolong the use of plastic.

Manufacturers compliance: manufacturers of plastics are capable of curbing pollution by producing what is adequate and investing in long lasting reusable products. This includes the textile industries who use polyester for clothing material.

Clean ups: while clean ups may seem redundant and insignificant in highly polluted countries it still decreases the plastics that end up in the aquatic systems. Governments must push citizen to keep their neighbourhoods clean and even make it a punishable offence to dump waste.

Awareness: Indeed, plastic pollution is known by many and neglected by many, however constant

education and more research with proven impacts can help people understand and clean up their act.

Ban unmanageable products: i.e. plastic cups, plastic sauce sachets. This decreases the ability to be recycled and decreases the life span due to the size, hence can easily degrade into a microplastic.

*The smaller the plastic the easier it is for it to penetrate into the flesh cells. Imagine a fish infested with plastic and ingested by humans.

Acknowledgements

Special thanks to Sihlangene Nali Moyo for her in-depth expertise and review of this short story.



Fig 1: Plastic waste in Harare

Effects of drought on Tadpoles

By Shiela Broadley



Fig 2: Khami dam

Water is a most important natural resource which forms the basis of life on earth. About 70% of planet earth is covered by sea water. All life on earth depends on water in one way or another. Humans need water daily for drinking, in agriculture, for their animal husbandry and even for some water sporting. Other organisms too depend on it for their offspring to survive including the amphibians.

This water can either be found in rivers, temporary pools, pans, hollow trees, wetlands and also as rain water trapped in small depressions in the ground and rocks. Water holds properties which support life on earth for humans and many other organisms.

Water is an essential component needed in the life of amphibians, they are distributed according to their habitat tolerance, although nothing prepares them for a drought which deprives them of the much needed water for their reproduction to be successful. Part of their lives is spent in water and part on land. The adult female during the mating season, which coincides with the start of the rains, will have her eggs fertilized by a male in amplexus with her in water. There the fertilized eggs develop into tadpoles if not devoured by some predator, and go through 46 stages of development from being a fertilized egg to a fully developed frog.

In this process of development in the water there is a danger of the water source running dry and dehydrating the tadpoles and eventually causing death. The tadpoles are in a race to develop quickly and leave before that disaster occurs. Under normal rainy season water is plentiful the tadpoles would grow to maturity if not taken by predators and allows for species diversity.



Fig 3: Tadpoles in water

This rainy season some species have already succumbed to the effects of a pending drought. The happily swimming tadpoles have been stopped in their tracks when the temporary pools of water having evaporated dry and left them to desiccate and shrivel to a dark pulp. The foam nest frog sits close to its nest for a day or two then leaving the contents of its nest to the weather elements, while it finds solace/ respite in nearby trees. The foam nest desiccates before the eggs have developed into tadpoles or they drop onto a dry pond desiccating with time.

The adult males and females once they have mated usually do not care for their off springs except for the male bullfrog that shows some parental care. The male bullfrog stays with the tadpoles making sure as the water dries towards the centre of a paddle he digs a channel towards it. This allows the tadpoles to swim through the channel to where water is still available for their development. Other species of amphibians once mated the pair leaves the fertilized eggs to take chances in the changing weather patterns.

The adults disperse to safer microhabitats where they are out of danger of dehydration. In the hope of successful reproduction for the season as soon as there are clouds and a hint of moisture in the air there is a sudden cacophony of different species of frogs calling. This can be short lived if no precipitation actually occurs. The process of dehydration is repeated with tadpoles not making it if there another prolonged break before the next shower.

For those species that do not directly lay their eggs in water it is still essential for the froglets to be able to emerge out of the ground. Without water there is no life, unfortunately droughts are becoming more prevalent in Matabeleland Region.

If droughts continue amphibian diversity maybe affected in a negative way.

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Fig 4: Tadpoles seen in Fig 2 after 3 days



Fig 5: *Chiromantis xerampelina* foam nest showing signs of desiccation

Meet the staff- Mrs Viola Makuva



Affectionately known in museum circles as maiChipeneti, Viola the Curator of Galleries at the Natural History Museum, Chipeneti is the Shona word for a safety pin and it is normally used in African set ups as a token for promise to be fulfilled later. As she joined national Museums and Monuments of Zimbabwe without a baby, as a married woman colleagues could not call her by her first name in the presence of the husband, who happened to work at the same institution, hence the name Mai Chipeneti.

Viola was born in 1976 in the mountainous and serene environment of Mutare as the first born in a family of four girls and two boys. Most of her childhood was spent between her rural village and Hartzel mission where her father worked as the groundsman. She was an avid lover of nature and the outdoors, a virtue that probably contributed much for her professional passion. As a young girl she used to go to the river to fetch water and she recalls vividly the water crisis in 1982 that was characterised by frequent midnight visits to the natural springs where they would queue for the precious liquid. Her favourite pastime was swimming in that river and also teaching her younger siblings the basic writing skills even before they began formal school. She attended school at the United Methodist Church run, Hartzel Mission from her primary up to advanced level passing with flying colours which made her the talk of the village and staff at the mission.

From a tender age Viola was a tremendous learner who won several awards of excellence. She recalls receiving eucalyptus seedlings which culminated into a huge trees still standing to this day in her family home. She had vast interest and aptitude for sciences, which led her to enrol for a Bachelor of Science General Degree in Biological Sciences and Mathematics at the University of Zimbabwe. Going to University was a delightful experience for Viola since it was her very first time to travel to the capital city. She also recalls her excitement at receiving the student payout (which the government used to avail to tertiary students) as it represented the long aspired financial independence and an opportunity to assist her younger siblings. Back in the day it was considered an exceptional privilege to reach such a level in education and she was a great inspiration to all the children in the community. Growing up, they were always urged by teachers to follow in the footsteps of Arthur Mutambara, a local boy who later became a robotics demagogue. University Mathematics was, however, very challenging although the science was always interesting. She also enjoyed the trips they

took to places like the Carimba plant in Marondera.

The best thing about university, however, was meeting the man who became the love of her life Dr. Simon Makuvaza who was still doing his undergraduate degree with the same institution. She completed her degree and graduated in 1998 and her first employment stint was as a teacher at St David's Bonda in Mutare. The boyfriend then sent her a newspaper cutting containing a job advert for a Collections Manager at the Natural History Museum, where he was working. This was a delightful opportunity for her especially considering the prospect of coming closer to Simon. After applying for the post she visited the Mutare Museum where she acquainted herself with museum practice, particularly the management of collections. She still vividly recalls meeting Mrs. Mhlanga, Mr. Manhanha and Mr. Kumirai when she went to National Museums and Monuments of Zimbabwe head office for her job interview.

Having succeeded in the interview, she joined the Natural History Museum on the 1st of May 1998, where her responsibilities entailed working with curators in eight research departments on tasks including documentation, fumigation of collections, report compilation and conservation. She was very comfortable in her new post although the computer applications were still a challenge to her. In 2003 she went to Kenya to pursue a Post-Graduate Diploma in Care and Management of Museums and Heritage Collections with the University of Nairobi. She was glad to leave Zimbabwe for a while since things were tough, but she was a bit sad to leave behind Simon and their two little sons. The studies enhanced her competence in designing and organising documentation systems and this saw her assisting curators from around the country through documentation workshops. In 2008, she did her Masters in Ecological Resources Management with the Midlands State University.

Following the massive turn-over of curatorial staff in 2009 and 2010 and the subsequent freezing of posts by central government, it was no longer deemed viable for her to remain Collections Manager when some research departments had no curators; therefore, she was appointed Curator of Ornithology in 2011. When the situation improved and posts were unfrozen, she was then appointed curator of Galleries, a post she has held to date. In 2012, Viola did a Professional Diploma in Sustainable Community Development and Humanitarian project Management and her current professional interests are in linking natural heritage with the communities who are the producers

and owners of cultural heritage. Pursuant to that, she is currently working on a proposal for a PHD in Ecological Resources, Bio-Diversity Conservation and Sustainable Community Development. All in all she now has four children – one girl and three strong boys. Her first born child is Tinos who was named after his grandfather, the second is Nyasha, which means grace, the third and only girl is named Tsungai after her grandmother and the last is Tatenda meaning thank you.

Viola's hobbies include walking for fitness, nature tours and watching movies. Her favourite food is rice and beef stew with potato and coleslaw salad. "I cherish the museum family who have moulded me into what I am today. From the time I joined as a single lady I have made friends with everyone, mothers like Hilderness Jobe, brothers, sisters, and uncles from whom I have learnt a lot" says Viola.

