



Ifa lemvelo



The newsletter of the Natural History Museum of Zimbabwe

Volume 3, Issue 3: June 2022

Some of the stories in this issue

Dealing with the cold: Hybernation in animals

The cold winter season brings a challenge all animals as they are forced to make adjustments to deal with the challenges. Most animals resort to hibernation, not only to escape the cold but also to survive when there is scarcity of food.

(Story on page 3)



Know your Monuments

Built by the Torwa dynasty, the Naletale Ruins are situated on a granite hill giving one a magnificent view of the surrounding country.

(Story on page 3)

Save these dates

Join us for another one of Sir David Attenborough's movies on the 20th of July. Details inside.

Bug/Moth night on Friday 29th of July from 6pm.
See poster inside

Citizen Science Training on the 2nd and 9th of July.
Details on the poster inside

An unusual Bagworm

On one of the monthly new moon bug nights, an unusual moth came to the light trap. The little pink striped moth turned out to be the adult bagworm moth *Trachypteryx rhodoxantha*

(Story on page 6)

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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everyday from
9am-5pm*

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SADC Countries

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Children \$5

International

Adults \$10

Children \$5

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Message from the Regional Director

Hello and welcome to this issue!

With cold winter days, it is time to stay warm indoors, make yourself a hot drink and settle down with something to read. We hope you will enjoy our newsletter as we take you once again on a journey through our wonderful galleries and also show you a glimpse of past and present research.

Do join us for our events and please do not forget to renew your Friends Membership.

Get to know your monuments

Nalatale Ruins: Monument No. 3)



Nalatale Ruins

This ruins is accessed from the Gweru/Bulawayo road 25km east of Shangani, follow the signage along a well graded gravel road. The Ruins are situated on a granite hill with a magnificent view of the surrounding country. The structure although only about 50m in diameter, the main decorated wall is one of the most impressive with chevron, herring-bone, cord and checker patterns, as well as the use of different coloured stones to enhance the contrast and adding to its sticking beauty. The original wall was topped with plinths.

Built by the Torwa dynasty who rose to prominence following the decline of Great Zimbabwe and founding Khami in the late fifteenth century and DhloDhlo (south of Nalatale) in the sixteenth before moving their capital to Nalatale in the seventeenth. After which the Rozwi people settled on the land.

Restoration on the collapsed walls was undertaken in 2015 from a grant from the Ambassadors Fund for Cultural Preservation of the U.S. Department of State (see the before and after photos).



Before restoration



After restoration

If you haven't visited this site yet, it is time to go exploring.

Dealing with the cold: Hibernation in Animals

By Violah Makuvaza

The cold winter season brings a challenge to all animals and they have to make adjustments to deal with the challenges. Many species have evolved to deal with hardships of adverse weather by avoiding them such as through migration. Different species have different preferences for hiding and protecting themselves. Hibernation is a state of minimal activity and metabolic depression undergone by some animal species and it is seasonal. Depending on the nature

and characteristics of the animals various terms have been adopted to describe how different animals spend the winter. Many kinds of animals hibernate not just to escape the cold, but to survive when there is scarcity of food. True hibernators rely on a combination of reserve body fat, stored food supplies (in rodents only) and a protective den to enable it to survive the winter. Hibernation is a behavioral response to changing seasons. Although hibernation in mammals is often associated with changes in resource availability caused by cold temperatures, hibernation in amphibians and reptiles most likely is a direct response to cold temperatures and secondarily to changes in resource availability. Hibernation removes the animal from environments that are likely to experience temperatures low enough to kill them. The protective den is called a “hibernacula” and it can be underground, under water, inside of rock outcrops, or inside of hollow trees; virtually any cavity providing temperatures warmer than external temperatures.

Ectothermic animals are those whose body temperature depends on the temperature of their surroundings. Endotherms are those which can regulate their own body temperature by generating internal heat. People are endotherms and warm blooded together with mammals and birds. Being ectothermic is an advantage because they don't waste energy regulating their body temperature and therefore don't need so many nutrients. Ectotherms are more reliant on environmental conditions an example is a lizard which can only warm up from a cold spell from heat applied from an external source like the sun. Endotherms can warm themselves up by producing heat metabolically and by shivering for example. In order for endotherms to regulate their temperature they need enough fuel to burn in other words enough food to counter the effects of the cold. This can be a challenge in freezing weather when food is scarce. The endotherms go into a state of torpor in order to survive. Torpor is a state of lowered body temperature and metabolic activity assumed by many animals in response to adverse environmental conditions especially cold and heat. The torpid state may last overnight as in temperate-zone hummingbirds and some insects and reptiles or it may last for months as in the true hibernation and winter torpor of many cold blooded vertebrates such as fish. Freshwater fishes enter a state of torpor during low water temperatures, they move as a group (school) to warmer waters in the deep of the lakes or to slow or stagnant waters in rivers. An animal in the torpor state will slowly awaken requiring an hour or more to reach a state of alertness once exposed to moderate warmth. At intervals of several weeks

the animal elevates its body temperature, awakens, moves about, feeds and return to its state of torpor.



Many birds enter daily (or nightly) torpor including kingfishers and owls as do many small mammals. Hibernation is a series of bouts of torpor that each last for many days. Hibernation differs from daily torpor in that it usually involves much lower body temperatures and metabolic rates and is often seasonal. Animals that go into daily torpor wake up and forage or feed in the usual way. Torpor conserves energy in the short term and often helps the animal survive a brief bout of poor conditions, such as cold nights.

Hibernating animals feed off their body fat or on specially stored food. When hibernating an animal's metabolism is slowed significantly, its heartbeat slows, it breathes more slowly (some animals even stop breathing for periods of over even an hour) and its body temperature drops in some extreme cases to below 0° Celcius. So animals hibernate in order to conserve energy.





loosing heat from their skin. These little creatures can curl up into a ball over winter to reduce their surface area thereby minimising heat loss.

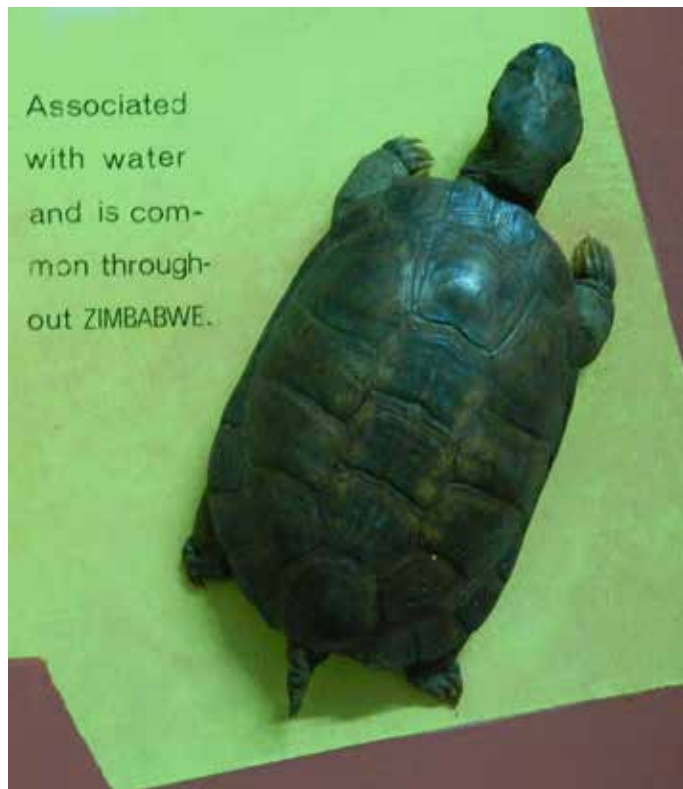


Many insects hibernate as adults and become inactive in winter, having their growth, development and activities temporarily suspended, with a metabolic rate that is high enough to keep them alive. In general, insects are able to survive cold temperatures easiest when the temperatures are stable, not fluctuating through alternate thaws and freezes. Honeybees have been studied during the winter and are found to remain semi-active in hollow trees through the generation of body heat. The consumption of up to 30 pounds of stored honey during the winter months makes this possible. Heat energy is produced by the oxidation of the honey, and circulated throughout the hive by the wing-fanning of worker bees. The bees are also helped by their hairy bodies, because the fine hairs help to trap the heat, and this effect is magnified by the fact that there are lots of bees together, all with hairy bodies.

Big animals like bears are not typical hibernators, they take a ‘winter sleep’ because their body temperature remain relatively high only dropping by about 5°Celsius and those with their young can still move around and suckle their young. The bears hole up in their hibernaculum without eating, drinking, exercising, urinating or defaecating for as long as 100 days and having lost weight. Insectivorous bats often wake up from hibernation to forage on warmer winter days before entering another period of multiday torpor. The small animals like hedgehogs, bats and squirrels tend to be hibernators because; (i) warming up from hibernating takes a shorter time than would be required for bigger animals which also require a lot of energy.(ii)hibernation is one of the survival strategies available to tiny creatures who are unable to migrate to escape deadly weather or find alternative source of food and (iii)smaller animals have a surface-area to volume ratio which makes them more susceptible to

Turtles hibernate in the bottoms of ponds and lakes deep in mud substrate. They bury themselves below the frost line where water does not freeze. Since shallow ponds and bodies of water can freeze solid to the bottom in the right conditions, turtles will seek out deeper waters to avoid this. In Zimbabwe there is one turtle species (*Cycloderma frenatum*)found in the freshwater river systems (S.Broadley, personal communication).Most frogs hibernate in the water, in similar methods to turtles. In some terrestrial frogs, their bodies virtually freeze solid and their hearts stop beating appearing completely frozen. They have a high concentration of glucose in their internal organs, which serves as a sort of antifreeze and also provides essential nourishment enabling them slowly thaw and “spring” to life once the sun peeks through the trees and temperatures rise above freezing. Toads hibernate on land in burrows that often 50cm deep, putting them below the frost line. Turtles and toads hibernate in a manner similar to that of snakes — by digging their way down beneath the leaf litter, under logs, or by making dens and burrows. They, too, slow their metabolism to conserve energy. Snakes do not actually hibernate during the cold winter months, instead, they conserve energy through a process called “brumation”, a slowing of their metabolism and the preservation of energy by limiting their movement. Snakes will make their own hibernacula or creep into underground dens, caves and old burrows made by other animals. Snakes often congregate in these hibernacula and are able to keep warm by staying together in a bundle. Like hibernation, brumation is a period of inactivity during winter. Unlike hibernation, however, brumation does not involve sleep. Snakes do not go into a deep stasis but will remain semi-active in their hibernacula in a low conscious state. The snakes’ metabolism will slow to the point that

they do not require nourishment while brumating, so unless there is an unusually warm weather spell that lures them out for a sunbath, they will remain in this hibernaculum the entire winter. Similar to how bears hibernate; they don't sleep through the whole winter. Snakes do aestivation which is the equivalent process to hibernation, but the snakes will be trying to escape extreme heat or drought. The true hibernators spend most of the winter in a state close to death, the animal may appear to be dead with the body temperature close to 0°Celsius.



In humans there is a lot of inactivity and overeating to generate heat energy due to the cold resulting in accumulation of fat and gaining weight unlike other animals that lose weight after hibernating. According to Foster Hove who assists in the operation of Barberton Gym and Healthcare Centre in the Bulawayo CBD 'summer bodies are made in winter'. Those who are mindful of their fitness and body weight are found frequenting the gyms in winter in order to achieve the results of hibernation which are weight loss. Interestingly such people appear very big in winter due to the warm winter clothes and will later show off their impressive bodies in summer when it will be hot.

Climate change continues to affect local and global temperatures and weather patterns, thus affecting biodiversity at local and global scale. The unpredictable prolonged and shortened winter seasons, the erratic and drastic changes in temperature which are a result

of climate change do not give the animals a chance to adapt and adjust spontaneously which can lead to biodiversity loss and has other devastating effects. Hibernating for a shorter period can put pressure on food availability and can cause a mismatch in the timing when animals require a resource and when that resource is available. For example, bees emerging from hibernation require a ready supply of nectar. If they emerge earlier than usual however, before flowering season, this food source may not be available to them.

In the winter season when these animals are hibernating, in torpid state and brumating in the bush, museum visitors have the opportunity and privilege of seeing the hibernators in the Natural History Museum galleries. The hibernators displayed include the turtles which are displayed as they appear in the ocean setup, the frogs and toads, the squirrels, hedgehogs, dormouse, bats and the live display of snakes, though at times the Black mamba have found even a way of hiding under the electric blanket.

An Unusual Bagworm

By Moira Fitzpatrick



Trachypteryx rhodoxantha

Armed with torches and cameras for active searching as well as the "light trap" the monthly new moon bug nights that have been running now for the 18th month and have turned up a wealth of information on our nightly invertebrates, and the odd vertebrate as well!

The light trap is a simple device and the only clever part of it is it has a UV light as well as a normal florescent light. Insects are able to see ultraviolet (UV) radiation especially nocturnal insects.

For nocturnal insects, attraction to light seems to result from navigational errors. During the night, insects navigate using celestial references. By keeping a constant angle to such a reference, the insect can fly in a straight path. If the reference happens to be an unnatural light source, keeping a constant angle would result in an equiangular spiral path towards the light source. Even small amounts of UV radiation seem to be sufficient for an object to be identified as celestial, resulting in attraction.

One of the little moths that came to the light trap was this little pretty pink striped moth (Figure 1& photo) which turned out to be the adult bagworm moth *Trachypteryx rhodoxantha*. What is so unusual about this bag worm is that its larvae do not make a bag of thorns or sticks like most others do, but rather makes a strange rough looking curved structure (Figure 3). This curved structure has an overlay of silk strands at the base which help to tether it to the twigs and leaflets of the plant and this silk is matted into a flimsy cocoon among the foliage (Figure 2).

Taken from *Arnoldia* Vol 3(33) Pinhey E. Thorn bagworms *Trachypteryx* Ragonot (Lepidoptera Phycitidae)

The Bulawayo Zeederberg Coach

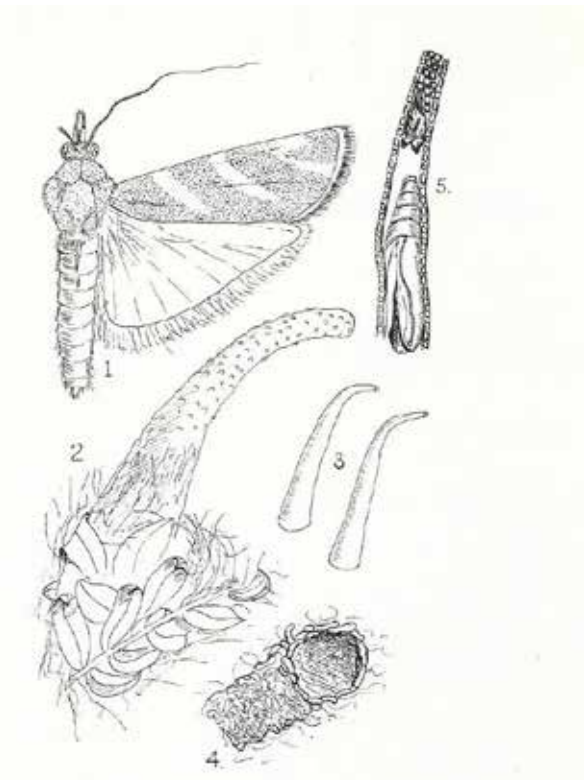
By Sithembiso Ncube



The Bulawayo Zeederberg Coach (Coach no 566) is one of the last two surviving coaches in southern Africa and was handed over to the Natural History Museum of Rhodesia, Bulawayo in 1964. This twelve seater coach was manufactured in Concord New Hampshire, USA by the Abbot-Downing Company for George Heys and Company, a Pretoria firm. It was delivered from New York on 9th October 1889.

George Heys and Company were carrying passengers to Eastern Transvaal and Kimberly but the Anglo-Boer stopped activities and the company ended. The coach was re-conditioned and sold to C. H. (Doel) Zeederberg who dissolved partnership with his brothers in 1895 and took over the whole running of coaches from the South to Matabeleland, with Bulawayo as its headquarters.

It is a matter of history that Doel Zeederberg and his coaches provided Bulawayo with its lifeline in the Matabele Rebellion from (March to August 1896) and the Commander and staff of the Matabeleland Relief Force travelled by Zeederberg from Mafeking to



On close examination of this structure it can be seen to be made of caterpillar faeces cemented together by webbing of silk. This silk continues right to the open apical end (Figure 4) which gets plugged with faeces when the larva pupates (Figure 5). The whole structure is 3-5cm in length and has been recorded on *Peltophorum*.

Bulawayo, a journey that took ten continuous days of travel! The arrival of the railway line in 1897 ended that long coach journey. Bulawayo to the Victoria Falls was served by the Zeederberg coaches until 1905 and they ran in Zambia even later. Belingwe, Lonely Mine and Antelope Mine in Kezi relied on the coaches for many years. Moreover a Bulawayo resident once hired a Zeederberg coach for his honey moon in the Matopo hills. By 1914 the motor car, although still quiet unreliable was replacing the coaches and by 1920 the automobile were gaining in popularity and by 1930 Zeederberg was now a car hiring company.

Coach 566 was sold to the Bulawayo Municipal Council in 1932 for festival appearances and its last procession was in 1950. In July 1950 it was given to His Excellency, The Governor of Southern Rhodesia for exhibition at Government House. Unfortunately the coach was kept in an open shed and its left side was exposed to the sun and in 1959 the condition of the vehicle gave rise to concern. The Commission for the Preservation of Natural and Historical Monuments and Relics (as this was now proclaimed a National Relic) took custody of the vehicle in 1960 and transferred it of the National Museum in 1964. Sadly the coach was in a very bad state and restoration work began on it in December 1966. It was also noted from old photographs and documents of the original coaches that coach 566 had received previous restorations and modifications and it was agreed that it had to have been in a serious accident that the undercarriage had needed to be strengthened significantly.

On 5th October 1966 the 2000lbs coach was raised through the window by crane to its permanent position, an operation that took 3.5 hrs. The repairs and restorations took place *in situ* taking care throughout this work to preserve as much old material as possible, the main aim being conservation rather than renovation. Painting in Zeederberg's (and Hey's) original colours was the final task. Lining out and lettering was then painted by hand following all the idiosyncrasies of the original artists. The full restoration took three months and the work mostly completed by February 1967. This is a fine museum piece that will never move again due to its fragile nature.

For information see:

Summers, R. 1967. The Bulawayo Zeederberg Coach: its History and Restoration. *Arnoldia Rhodesia* 3(11): 1-11.

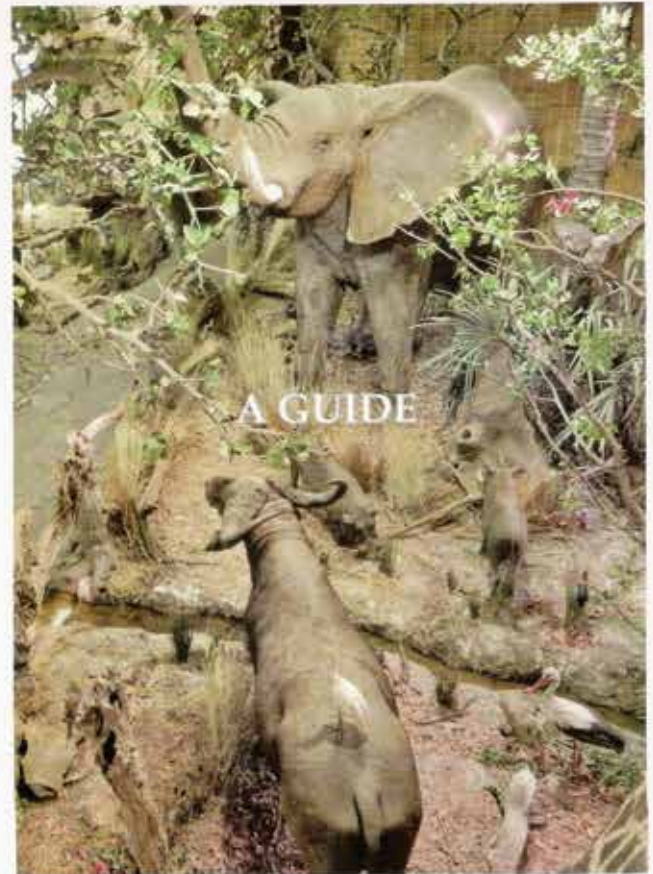


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Some Common Spiders of Zimbabwe

Arranged by Jonathan Whitaker

**NATURAL HISTORY MUSEUM
OF ZIMBABWE**



National Museums and Monuments of Zimbabwe

THE NATURAL HISTORY OF THE MATOBO HILLS

Dr Fenton PD Cotterill
Dr Moira J FitzPatrick
Julia Duprée

THE NATURAL HISTORY OF THE

Matobo Hills

Edited by
Dr Fenton PD Cotterill
Dr Moira J FitzPatrick
Julia Duprée

Photographs by Richard Peek
Illustrations by Jenny Whalley



Events

With climate change and the many discussions about the 6th mass extinction, come find out what happened to the Mammoths and join Sir David Attenborough on a paleontological dig to uncover past life on our planet

All Welcome to join us for

ATTENBOROUGH AND THE MAMMOTH GRAVEYARD

Wednesday 20th July at 1pm



Citizen Science Training

All welcome to join us at **Mabukuwene Nature Reserve**,
Chipping Way Burnside

on Saturday 2nd July from 8 - 11am

for training on how and what to record for
science. Bring camera and/or cellphone.

Please download the iNaturalist App on
your phone before you come.



Join us at the Natural History Museum

on Saturday 9th July at 9.0am

For simplified training on how to use iNaturalist.

Contact Moira 0712 432 506 for enquiries



Events Cont'd



23-31 JULY 2022

Join us at the Lower Dam,
Hillside Dams for a

Bug/Moth Night

On Friday 29th July from 6pm
onwards

Bring your touches and cameras and
lets all become citizen scientists by
recording what we see!

**Don't forget to renew your friends
membership**

friends
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VALID FROM 1ST APRIL 2022 - 31ST MARCH 2023

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