



# KRUGER2CANYON

## NEWS

September 2022

The Farm House, R527, Zandspruit, Hoedspruit, Limpopo Tel 078 979 6486 email: editor@kruger2canyon.co.za

## The Rhisotope Project – looking to combat the future of rhino poaching through nuclear technology



Mark Bishop

**Idly flipping through posts on Instagram, as one does, and looking at the preponderance of mediocrity that is published, my eye caught sight of an interesting post – nuclear science and technology to save a species! Now that was worth looking at.**

After an email or two, this led me to 'The Rhisotope Project', and a very interesting 40-minute interview with the mastermind behind the project – Professor James Larkin, Professor of Nuclear Physics, who previously spent his time and efforts in the realm of monitoring and combatting nuclear terrorism! Now he's involved in researching the use of radioactive isotopes in combating rhino poaching!

Clearly a humble man, the Professor soon made me feel at ease, albeit I was initially a little out of my depth, what with radioactivity, isotopes, half-lives, detection, and more being thrown at me. We soon settled into a healthy two-way conversation about this incredible project James is involved in.

What he has done, is harness the numerous skill-sets that he has within the nuclear physics world and packaged them, to offer his abilities and knowledge in an attempt to come up with

a solution to the runaway poaching of rhino. We all know what that status is – bleak and critical.

The project started in earnest 18 months ago, although the idea was a long-term dream. The dream was to put small 'bits' of radioactive isotope into rhino horn to combat poaching – simple really. Not so – numerous teams from all over the world have offered their services to James, in an effort to perfect the dosage and application of radioactive isotopes into rhino horns, whilst ensuring that no harm comes to the rhino. The firm belief is that rhino horns need to stay on rhinos – "we don't want the Big 5 ½, we want the Big 5"!

The hypothesis is that by using radioactive isotopes, the end users of rhino horn poaching will be deterred because of the fear of anything potentially radioactive. Smugglers will be deterred because of the shift in the 'reward : risk ratio' firmly to the side of the law. This is because there is already a massive network of 11 000+ monitors installed around the world at various portals, as well as staff that carry pager monitors, dogs and more, all concentrating on monitoring and passively working to detect any movement of radioactive material. The project will piggyback on these systems, and so any rhino horn, that

has a radioactive isotope inserted in the horn, would be subject to detection by these passive systems. That is a huge risk for the perpetrators of poaching because if they are caught with a 'radioactive horn', current international legal protocols, allow prosecution for terrorism offences as well!

Essentially the isotope acts as a tracking system, which is very difficult to remove from the horn. One basically must demolish the horn to remove the isotope (if you can find it!), which obviously will decrease the value of the horn. So, there are three matters to consider as a poacher/trader of the horn: decrease in value, possibility of detection, and if consumed, the probability of getting very ill, sterility and loss of libido too. For those crime syndicates there is also the likelihood that horns are 'batched' or 'bundled' with other contraband, and so the risk of that illicit package being detected increases, courtesy of the isotope.

Of course, the fundamental caveat in this whole project is to ensure that there is absolutely no harm that may befall the rhino, with the introduction of the isotope to the horn. Collaboration with the Nuclear Energy Corporation of South Africa (Necsa) and teams from all over the world ...

*Cont. on page 3*

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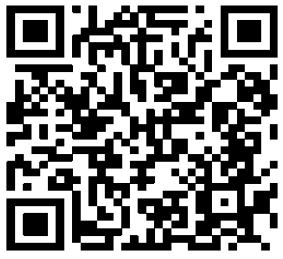
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# From the editors desk...



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**Well, thank heavens summer is finally here. I believe we should prepare for the scorcher!**

From a conservation perspective this month was 'Rhino Month' hence the bias towards rhino in this publication – I hope and trust that it is not too much. That said, the continual operations and attempts to combat poaching, still have a long way to go to ensure

that this species will be available to our grandchildren! We need to continually remind ourselves of this plight and to keep it front of mind.

Last month I did not have this column because of the proliferation of letters, and some lengthy ones at that! I did take it upon myself to pass one such letter (see below) to the Mayor for comment– I also included five questions that were posed to me, for comment. The five questions were quite simple:

1. What are the new further developments on the Berlin housing project?
2. Why can we not clean up our town – it's getting full of litter and bottles and is not a good visual appearance

for tourists nor for residents?

3. Can nothing be done about the mining trucks stopping opposite La Bamba – as well as the thatching trucks that stop there. The litter there, as well as the traffic jams are really a sad example on our control (litter and traffic management) and pride (in our town).
4. The road to Eastgate airport is in a shocking state – when is something going to be done about that? It's now urgent – once again the first picture a tourist has of our area.
5. When are we going to get a proper controlled recycling dump and a building material dump? The road from

Klaserie to Mariepskop is a disgrace with rubble and rubbish just dumped in the veld (for example)

The text of the letter received was as follows:

It's all very well wanting to put low-cost housing in our town, but let's just think about that – if we cannot keep a clean town now (just look at the mess) without conservatively another 2000 people, how are we going to look then? Not to mention the increase in traffic, taxis hooting all over town, pressure on the infrastructure, light pollution, and possibly an increase in crime. Has ANYONE thought of that? I think it's a very bad idea and will only lead to a degradation of the town – and then what? And

I can tell you the next properties to go will be the adjoining property next to that one on both sides – check that out Mr Mayor and the rest. What do you say to that? Anon

Sadly, after waiting more than a month on the Mayor's office or the Mayor himself, we have yet to receive any response or comment to the above. I really hope it's not a case of 'same-old-same-old' – whilst we appreciate that the Mayor is busy, please just give us a short comment to work with.

I'm going to cut off with that – in the world we live in, we do want to know what's going down, and we do want answers. Communication is the key, without which everyone is in the dark, rumours begin to fes-

ter, and no one really knows what's happening. It's time for us to communicate, because it is clear that the dynamic in our town is changing fast – for the better? Who knows.

I hope you enjoy the read – "until next time".



Mark Bishop Editor



# Letters to the editor

Dear Ed,

I have taken this opportunity to bring this matter under your attention. My family and I have been residents of Hoedspruit for 19 years and it saddens me to address this matter.

During this past month my wife and I along with a few friends made our way up to the Blyde Dam look out point. What we thought might have been a rumour turned out to be a reality. The road leading to this look out point is something quite horrendous. One actually has to pay R35.00 per person to drive on this road!

This area is known for its beauty and natural fauna and flora, and should be an amazing experience for all. Fortunately we were able to drive up this road with our vehicle, others had to turn around because of the state of this road. Speaking of being fortunate, we were also able to pass through the security check point before this



The road up to the Blyde Dam (above) and the spectacular Blyde Dam, a highlight for every tourist visiting Hoedspruit (above right) Images supplied

area will be out of bounds to the public due to an International television show which I presume generates enough income in order to maintain this magnificent area?

What is the reality now is that an existing tarred road leading to this wonderful tourist destination can only be reached by an off road capable vehicle, and that one still needs to pay in order to gain access it – what an embarrassment.

I have attached a few images showing the condition of the road and a the wonderful area I'm referring to.

I trust that this article is found worthy to form part of your newspaper reading material.

Kind regards,  
Nico Pretorius - **Exquisite African Gifts and Curios**

Ed: Thanks again Nico – your contributions are always very welcome. Well, what can I say,

but that this kind of mismanagement and lack of accountability, is an endemic disease that has permeated the very essence and ethos of our lives in South Africa. It seems to me that once again it will take private enterprise to repair and maintain, otherwise it will not happen. So sad.



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# The Rhisotope Project – looking to combat the future of rhino poaching through nuclear technology

Cont. from page 1

Collaboration with the Nuclear Energy Corporation of South Africa (Necsa) and teams from all over the world especially in the United States and Australia, have researched this extensively and have concluded that: firstly, there is no chance of possible migration of the isotope into the animals body (it remains in the horn), and secondly, the research into the half-life of the isotope to be used in this project has quantified and certified, that the radiation level of the isotope is so low that it will in

no way harm the animal. In fact, the isotope will have an effective 5-year lifespan, whereupon it would need to be replaced. The vision of project is that if enough isotopes are out in the wild, the risk of a poacher taking a chance with a rhino horn will be high enough to effectively decrease the chance of poaching, even if the replacement program lags behind schedule.

It must be pointed out that this project is still in its research stage. Other efforts and attempts to reduce poaching via various means often have not considered the consequences of their

actions that their efforts impose on the animals, albeit it with the wellbeing of the rhino at heart. Dehorning for example, which is a debateable action, possibly has negative effects on the inherent rhino genetic make-up – they are needed to fight, joust and protect – and without them those activities or actions cannot be concluded as nature would have them concluded. As James stated, “A rhinos horn deserves to remain on the snout of a rhino, that is its evolutionary place; let’s try and keep it there!”

The positive response from organisations, re-

search institutions, universities, and ‘Joe-public’ from all over the world, has been incredible, and has given the project much momentum and traction. Everyone wants to get involved of their own free will, in making sure that this project will succeed and will work, to finally put the brakes on the savagery of rhino poaching, as a start.

James, although pioneering this research, pays tribute to his team that he has surrounded himself with. All contribute to the social media, anthropological, educational, and social upliftment spheres of the

project. Target date for the initial introduction to the wild is March 2023 – but there are still a number of factors out of the project teams’ control, that have to fall into place for that to happen.

This is such an exciting project and more information for interested parties, donors and the like, can be obtained from Jessica Babich at [jessica@wildrevolution.co.za](mailto:jessica@wildrevolution.co.za). We wish James well and look forward to the day that he can stand tall and proud, and state that they have finally got the isotope into the wild!



**Professor James Larkin, Professor of Nuclear Physics**

## Rhinos - What are their relatives, what is horn made of and why are they poached ?

**Contrary to popular belief, they are not related to elephant and hippo .... just because they are all large, generally hairless and have thick skins does not mean they have an affiliation.**

In the distant past all these animals were collectively referred to as *Pachyderms*, literally meaning ‘thick-skinned’. Modern DNA sampling techniques have proven that the closest relatives of rhinos are the tapirs and the equids, the latter being horses, donkeys, asses and zebras.

**The horn is composed of keratin-the same material that nails, claws and hooves are made of. It’s in a filament form that is tightly packed at the base where it is visually more fibrous, but it’s smoother and more polished for the rest of its length.**

It grows from the skin and is not attached to the skull but rests on the frontal (nasal) bone. It continuously grows at about 60- 100 mm per annum. Horn is kept sharp and honed as an effective weapon by rubbing it against objects such as termite mounds, trees, exposed roots, earth banks, etc. This continual wearing down results in an array of shapes and lengths that are

useful identifying characteristics. Horn length is, therefore, not always related to age. On average, the horns of females tend to be slimmer and longer than those of males. The horn is tough and pliable. I have seen a dominant white rhino male after killing a young male, with his front horn-tip bloodstained and bent (at about 45°), but not broken.

I once found a horn lying in the bush. It had probably been ‘dislodged/ripped off’ (as can actually happen) in an aggressive encounter with another rhino or an elephant. In such a case, with the main epidermal matter (or most of it) from which growth originates having been painfully removed, the horn would be unlikely to regrow properly. If the horn is cut off or removed above this sensitive layer, growth is unaffected and the horn will quickly be honed to a point. As there are no nerves in the horn itself, the animal does not feel pain if it is cut or broken. Thus it is feasible to shorten and blunt the horn to reduce chances of injury to the animal or surroundings during transport or translocations. Removing the horn for management purposes will, however, have consequences. This is because the horn is a very important offensive and de-

fensive weapon and rhinos are vulnerable to predation (especially calves) or attacked by rhinos with horns when defenceless. Dehorning can probably have significant social repercussions and the consequences of this management technique to possibly save rhinos from poachers needs to be studied further before being widely implemented.

**Rhino horn has long been sought after in the Middle and Far East.** It has ornamental uses as well as many supposed medicinal properties. As with any commodity that is in demand but scarce, rhino horn fetches a high price in these areas, and because it is not available legally, illegitimate means are the only way to procure it. Current demand from that part of the world has driven the price so high that the rhino horn is now worth more than gold. Most horn has traditionally gone to Yemen where it has been used in the manufacture of ceremonial dagger handles. This, thankfully, is being addressed with synthetic handles now gaining acceptance. Some horn has also been used in the Far East where it is used in its ground-up or powdered form to treat various medical problems, either alone

or in association with other substances. Its use as an aphrodisiac is only one of the many in this region. The recent upsurge in poaching is most probably as a result of increased affluence in China and other countries where the economy has boomed - suddenly creating a large population that want rhino horn and have the means to pay for it. Secondly, a prominent government official in that region claimed publicly that he was cured of cancer by using rhino horn, leading to a frenetic demand from other sufferers.

*An excerpt from ‘Beat about the Bush – Mammals and Birds’ by Trevor Carnaby, Published by Jacana Media, Second Edition reprint 2018.*

*Purchase for a discount of 30% at <https://jacana.co.za/product/beat-about-the-bush-mammals/> Coupon code **BATB30** is valid until 31 October 2022*



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# Levitating frogs and the power of play

Don Pinnock

**Watching graphite peel off the point of a pencil I was sharpening, reminded me of a quirky tale about levitating frogs and a Nobel Prize that began with playfulness and a pencil.**

This is a story about the power of play and a levitating frog. Its hero is a man named Sir Andre Konstantin Geim, a Russian-born Dutch and British citizen and Professor at the University of Manchester, whose dictum is that it's better to be wrong than boring.

After levitating the frog, he explained that, in his experience, if people didn't have a sense of humour they didn't make very good scientists. He has and he is: Geim's the only scientist to win both a Nobel Prize in 2010 for his discovery of the world's strongest substance, graphene, and an Ig Nobel Prize awarded for experiments so outlandish they first make people laugh – then make them think. It's not a new story but worth retelling.

When news of the flying frog began making the rounds in April 1997, people assumed it was an April Fool's joke. It wasn't and may result in anti-gravity cars that never touch the road. This is how it happened.

It had never occurred to scientists that water's magnetism – billions of times

weaker than iron – was strong enough to counter gravity. But one evening, while working with Radboud University's High Field Magnet Laboratory in the Netherlands, Geim set the electromagnet to maximum power and poured water into the expensive machine's hollow core. He can't remember why he acted so unprofessionally.

The descending water "got stuck" within the vertical bore and balls of water started levitating. He had discovered that a "feeble magnetic response of water" could act against a magnetic force, including that of the earth. Frogs are mostly water so he tried with a frog and it levitated too, with no ill effect on the creature.

It was the first time a living organism had levitated purely due to a magnetic field. He would share the Ig Nobel prize with colleague Michael Berry and be awarded the International Creativity Prize for Water.

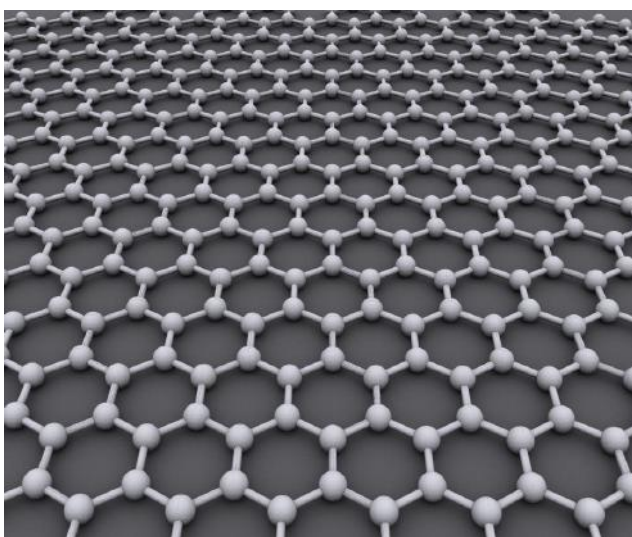
What seemed like a late-night lark, evolved into what Geim calls the Friday Night Experiments – a bunch of scientists working after hours every Friday on the "crazy things that probably won't pan out at all, but if they do, it would be really surprising". From the start of his career, he had devoted 10% of his lab time to this kind of research.

The Friday Night Experiments were often so outlandish and such fun that



Jumping frog

Image : Unsplash



Graphen.

Image: Wikimedia Commons



A live frog levitates inside the vertical bore of a Bitter solenoid in a magnetic field at the Nijmegen High Field Magnet Laboratory.

Image: Lijnis Nelemans / High Field Magnet Laboratory / Radboud University Nijmegen / Supplied

they had to limit how long someone worked on them so as not to hurt the careers of the lab's postdoctoral fellows or graduate students. Researchers experimented on crazy, un-fundable things, simply because they interested them.

Often, said Geim, "we were entering into someone else's territory, to be frank, and questioning things people who work in that area never bother to ask". They were ways for Geim and his team to acquire the advantage of the non-expert – the deliberate amateur.

Out of the two dozen or so Friday Night Experiments, three were hits, a success rate of 12.5%. The flying frog was the first. The second was the creation of "gecko tape", a biomimetic adhesive that mimics the clinging ability of the gecko's hairy feet. The third hit was the isolation of graphene, which they found with the help of pencil lead and Scotch tape. He and his colleague Konstantin Novoselov would go on to win the Nobel Prize in physics for its discovery.

The graphene discovery happened when some of the researchers were using tunnelling microscopy and cleaning the dust with Scotch tape. Another researcher, meanwhile, was attempting to produce the thinnest possible slice from a piece of graphite.

Geim noticed the dust on the tape. For no particular reason, he dabbed some more and found it was forming a one-atom-thick layer of carbon atoms arranged in two-dimensional hexagons which he called graphene. It's the thinnest material in the world, as well as one of the strongest and hardest.

It confounded scientists at the time, who thought it was impossible to have a 2D lattice like that due to thermal fluctuations, which would cause such a structure to fall apart. However, Geim and Novoselov were able to prove them wrong.

It was a major discovery. Graphene has many

unique properties: it's 200 times stronger than steel but lighter than aluminium; transparency is 98% but it's impervious to helium, the most permeating gas; and graphene is the best electrical conductor at room temperature.

The team submitted a paper summarising their findings to the august magazine *Nature*. The journal rejected it twice. In his Nobel Prize acceptance speech, Geim noted that one referee said it did "not constitute a sufficient scientific advance".

He is by nature a scientific explorer. "Many people choose a subject for their PhD and then continue the same subject until they retire. I despise this approach. I have changed my subject five times before I got my first tenured position and that helped me to learn different subjects. When one dares to try, rewards are not guaranteed but at least it is an adventure."

Playfulness, he says, lets us withstand enormous uncertainty. It's all about what he calls the beginner's mind, "the useful wonder of the amateur". But frivolous research techniques are something that serious science doesn't easily condone. It takes an inordinate amount of courage to cultivate the method of the deliberate amateur as a strategy.

"I went to conferences as a beginner with having a couple of already prestigious papers, being an Associate Professor. People looked at me [and said], 'Who is this materials postdoc? What is he doing?' ... It's not secure. You're moving in the unknown waters which are not only scientifically unknown but psychologically. I suppose this is where play comes in."

Being the first and only scientist to win both the Nobel Prize and Ig Nobel Prize, Andre Geim is testimony to the ingenuity and creativity of a playful mind.

Previously published in the *Daily Maverick*

**"When one dares to try, rewards are not guaranteed, but at least it is an adventure."**

Andre K. Geim



Sir Andre Konstantin Geim, FRS (born 21 October 1958) is a Russian-born Dutch-British physicist working at the University of Manchester. Geim was awarded the 2010 Nobel Prize in Physics jointly with Konstantin Novoselov for his work on graphene.

Image: Wikimedia Commons

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# Anton Mzimba – the Best Game Ranger Award

Mark Bishop

At dinner the other evening it came as a surprise to me to learn that Anton Mzimba (*Kruger2Canyon News – August 2022*) had been posthumously awarded The Best Game Ranger Award at an awards ceremony, The African Conservation Awards, presented by the Game Rangers Association of Africa (GRAA) in Kasane, on the Chobe River in Botswana. What a wonderful surprise and so thoroughly deserved.

Thankfully I was able to get in touch with Matt Lindenberg (Global Conservation Corporation) to find out more about the award ceremony.

It was held alongside the Chobe River, at sunset – a beautiful and fitting setting

for this ceremony. Anton's award was saved for last. Colin Rowles and Leo (from Oceans Without Borders) were tied in the runners up position, and Anton won the award. John Jurko II and Matt took the opportunity to speak, and Matt asked for a minute of silence at the end – over 100 attendees stood up to honour Anton, and all the brothers and sisters that have been lost on the front lines.

All the rangers present had lost their equivalent of an Anton in their lives. The GRAA put out a figure that on average, every week, three rangers die on the front lines around the world! That is a statistic from The Thin Green Line – and it equates to over 150 rangers' deaths per year! Anton therefore represents

a much bigger issue and a huge problem facing conservation areas around the world.

The GRAA sponsored a pair of Zeiss binoculars and a pair of Jim Green boots, which will be given to Anton's replacement at the Timbavati Private Nature Reserve. The trophy that was received on Anton's behalf will be taken back to his family.

Once again, we reiterate our shock at Anton's murder, but draw courage, strength and hope from this award, recognition of his service, and the fact that others are standing up to pick up his fallen baton in the fight for conservation.

*Kruger2Canyon News humbly apologises for the oversight in the misspelling of Anton's surname in the last edition.*



John Jurko II and Matt Lindenberg (both Global Conservation Corporation) accept the Best Game Ranger Award 2022 awarded posthumously to Anton Mzimba

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# Rotary K2C Cycle Tour awards

Sports Correspondent

**After a two year hiatus, the ROTARY K2C Cycle Tour finally got underway, affording cyclists the opportunity to participate in a unique and select riding experience through some of the most renown private game reserves bordering on the Kruger National Park.**

The route is 100km and starts at the edge of the Kruger National Park (near Orpen Gate), heading off through the Timbavati, Thornybush and Kapama Private Game Reserves and then crossing the R40 continuing into the Blue Canyon Conservancy. All the reserves and conservancies traversed are Big 5 domains with phenomenal scenic vistas. Riders experienced sightings of plains game, buffalo and a herd of elephants. Main roads are easily crossed with the help of senior Rotarians with the invaluable assistance of both Farm and Town Watch members ably assisted by the Hoedspruit Traffic police. The

invaluable effort in the raising of funds from this venture, allowed the Hoedspruit Rotary Club to host an awards evening on the 9<sup>th</sup> September at the Fig and Bean Restaurant. The evening was well attended with the initial offering of a welcome drink and snacks. By the Fig and Bean. Very ably co-ordinated and managed by a committee of Rotarians including the President, Wilana Manderson, the evening turned out to be a great success.

The awards evening is hosted by the Club to pay tribute and thanks to all those people that made the Tour possible, and to distribute proceeds to the deserving partners in the event, without whom the event could not have taken place. The gathering was about projects and the sponsorship obtained leads to the disbursement of funds to those that made the ROTARY K2C Cycle Tour a reality.

Wilana addressed the gathering, and paid tribute to Wendy van Schoor, "who has given so much of her time to the event over the years"

Thanks were also given to Paul White for doing a 1000 jobs with consistent drive to make things happen. That effort saw the Rotary President award him with the 'Rotarian of the Year' award.

Thanks and awards were paid out to the following:

Blue Canyon Private Nature Reserve, Kapama Private Nature Reserve, Thornybush Private Nature Reserve, and the Timbavati Private Nature Reserve – each being awarded R 25 000. Farm Watch and Town Watch were awarded R 15 000 and R 10 000 respectively. A further R 5 000 was awarded to the Timbavati Foundation and Jahara, and R 3 000 to Debbie Thomson for all her welcome efforts in making sure it all came together. As the main sponsor BUCO, represented by Bertus Myburgh, received a framed 'event shirt' that was gratefully accepted.

Further thanks were given to Haenertsburg Rotary Club, Hlokomela, Polokwane Rotay Club and the Mayor's office, although he was not present. Rotary is a world-wide net-

work of inspired individuals who translate their passions into relevant social causes to change lives in communities. It offers individuals the chance to apply personal experience and professional skills to solve these challenges and create positive change. Rotary boasts over 1.2 million members in more than 34 000 clubs worldwide in over 200 nations and geographical regions.

We can be proud of, and thankful to our Hoedspruit Rotarians for the work that they do within our community.



Paul White - Rotarian of the Year



Main sponsor Bertus Myburgh receiving the event shirt ( above left) and guests enjoying the evening ( above right ) All images supplied



# Caterpillar rearing - A new adventure



Swamp monster larva (above) Swamp monster hatchlings and adult with eggs (below) - Ian Sharp



Ian Sharp

**In August you were introduced to the Caterpillar Rearing Group (CRG). The context was historic and high-lighted the origins of the group as it stands today.**

Having been participatory to the CRG since its inception, my daughter Allison and I have experienced very interesting findings while searching for and rearing the larvae of many different Lepidoptera species. Between us we have attempted in excess of 3000 rearings, with some unusual discoveries.

The forests of Franklyn Park are one of our favorite places to go 'caterpillar hunting' along with the many other delights that are on offer while walking the trails. A particular tree of constant interest is the forest knobwood (*Zanthoxylum davyi*), but more from a butterfly perspective. Our largest butterfly species, the Emperor Swallowtail (*Papilio ophidicephalus ayresi*), has the knobwood species as a larval host plant.

On one of our excursions along the trails of Franklyn Park, to a spot high up the, we found an interesting larva that was later to be given the name of 'squirty', due to a pair of tubular appendages extending off the last segment. It has been indicated that these appendages are a defense mechanism, as the larvae are able to squirt an acidic deterrent when approached by predators.

The first specimen found created much interest and discussion. Unfortunately, the quest to rear a 'squirty' was filled with many disappointments. On returning home with our latest discovery, it was noted that the container had a gaping hole in it, and that our newly found specimen had escaped. This incident increased our resolve to rear this little 'Houdini' and, therefore, many more trips to Franklyn Park were undertaken with differing levels of success.

Finding more specimens was not always easy and there were other issues to contend with. Parasitoids are always problematic – most disappointing was when an almost fully grown larva that was being reared was found to be suspended over a bed of parasitoid cocoons. Furthermore, having a fresh supply of plant material to feed the larvae, was a critical issue. The food could only be kept in the refrigerator for so long before wilting. Poor food quality also leads to the demise of any larvae being reared. Heat and humidity are factors affecting rearing success as mould thrives un-

der such conditions.

After a number of seasons of failure, Allison discovered a batch of squirty larvae on a young knobwood tree at the lower end of the forest. These larvae were treated like royalty from the Lepidoptera world and successfully reared to pupation. Some weeks later the adult moths started to eclose. Having expected a spectacular moth from this weird larva, there was discernible disappointment when a typically drab moth emerged.

Another specimen that created much interest was a day-flying moth from the top of the Mariepskop Mountain. Siting on the tip of a dry twig, above a batch of dozens of eggs was a beautiful day-flying moth. Collecting eggs is always high-risk as sometimes the eggs are not deposited on the actual larval host plant. In this case, samples of surrounding vegetation were collected to provide a range of choices to the hatching larvae with the hope of one hitting the jackpot.

Enquiries were made about this moth species, to determine what the larvae may feed on. As far as the species is concerned, experts could only provide a genus and the species remained a mystery. However, some critical information on this particular genus was provided. On emergence from the egg, the larvae of this group must find some swampy water to drink as they need of the bacteria present in such water, to assist with digestion.

When the larvae started to

hatch, we realized that all the plant material we had harvested was of no benefit. My wife Tertia suggested we try something from our fishpond. Hastily a variety of plants from the pond were sampled, put in containers, and the hatched larvae, now christened 'swamp-monsters', placed on the plant material.

There was great excitement when some frass was noted on the leaf material from the water lilies. On closer inspection, clear evidence of foraging activity was found on the underside of the lily leaf material.

What appeared to be an issue, was totally mitigated by the water lily availability and obvious palatability. The larvae grew strongly, passing through their instars successfully, and finally pupating. Many did die for some unknown reason, but when the first adult eclosed, there were smiles all round. An bonus was that that some females even produced batches of eggs! A second generation of larvae hatched, and more adults were reared – a complete success story.

Only one question remained – what is the species? That may be another story to write about at a later date.

This is but a tiny glimpse into the amazing world of caterpillar rearing, and the incredible experiences we have had in rearing Lepidoptera larvae. The learning curve is unbelievably steep, but worth every effort.

# Black rhinos return to Zinave National Park in Mozambique



Manketti Black Rhino crating – Image supplied

## Peace Parks Foundation

Seven critically endangered black rhino have been safely translocated from Manketti Game Reserve in South Africa to Zinave National Park in Mozambique.

This follows the successful reintroduction of 19 white rhino to the park just two months earlier (reported in July 2022). The white rhinos have adjusted to their new home with ease and, remarkably, a new calf was born into the herd soon after their arrival. The same is hoped for the newly arrived black rhino brought there as part of a pioneering conservation project committed to restoring, securing, and expanding populations of both species.

The initiative is the result of a partnership between the mining and renewable energy solutions company - Exxaro Resources, Peace Parks Foundation and Mozambique's National Administration for Conservation Areas (ANAC), in support of and in collaboration with the Governments of Mozambique and South Africa. Working to a two to three year timeline, the project is already well on its way to relocating more than 40 rhinos to Mozambique in a series of highly co-ordinated and carefully managed rewilding operations.

The rhinos were kindly donated by Exxaro Resources through its Manketti Game Reserve. Exxaro has played

a significant role in the strategic planning, coordination and funding of this international conservation initiative. Dr Nombasa Tsengwa, CEO of Exxaro Resources, explained: "As part of Exxaro Resources' ambitious project to relocate its populations of black and white rhinos, a partnership was formed with Peace Parks based on the Foundation's proposal to establish a new founder population of rhino in Zinave National Park. This option compliments Exxaro's Biodiversity and Environmental Management strategies and met our project criteria of moving our rhino to a safer location, whilst at the same time significantly contributing to broader rhino conservation strategies of the region."

### Under extreme threat

Beyond its extinction in Mozambique, the black rhino suffered a radical decline across its entire native range: between 1960 and present day their numbers, scattered sparsely from Kenya down to South Africa, dropped by 98% to less than 6,000 individuals. The mammoth task of increasing numbers and rebuilding thriving populations was overwhelming at its worst - but this has served as a powerful motivation to persist in innovative conservation efforts, with active range expansion being one such approach.

To protect rhino for future generations, their reintroduction to new suitable

habitats, with capacity to rebuild large viable breeding herds under strong security and strategic conservation management, is one of the many measures currently undertaken by Peace Parks – and Zinave makes a strong case as a safe haven for new founder herds. It offers the expansive but secure range the species needs to thrive, with broadly rich rewards for its own ecosystems in doing so. The introduction of rhino is the pinnacle of an extensive rewilding programme that has seen more than 2 400 animals from 15 different species reintroduced by Peace Parks and ANAC, who jointly develop the park under a long-term co-management agreement entered in 2015. The focus of this partnership is to create a healthy ecosystem by introducing viable wildlife populations, attract tourists back to the park, and support the livelihoods of local communities living around the park.

African rhinos are 'keystone species' – their presence and role within an ecosystem has a disproportionate effect on life of all kinds, from insects to antelope and elephant. These biological impacts differ crucially between the two species, combining restorative benefits which cannot be reproduced. Whilst white rhinos are helping to restore Zinave's grasslands as they graze, black rhinos browse on very specific plants and process them uniquely, acting as a potent natural

fertiliser and allowing the nutrients from vegetation to be cycled back into the earth with great efficiency. The benefits of this soil enrichment show through in the growth of more, and more nutritious, plants in these ecosystems. This same nutritional advantage, in turn, is passed on to particular species which share the rhino's denser habitats and depend on flourishing vegetation in order to survive and thrive.

Werner Myburgh, Peace Parks CEO, said: "The arrival of a founder herd of black rhino in Zinave marks an incredibly special achievement for Peace Parks and our partners. To have two African rhino species reinstated as the vital cornerstones of this complex ecosystem will make a crucial contribution both to the greater biodiversity, and to the status of the park as a sought-after eco-tourism destination, and the only "Big Five" national park in Mozambique. Zinave is one of five national parks in a 100,000 square kilometre transboundary landscape initiative spanning three countries. The development of the park is the surest way to generate direct economic benefits for the communities dependent on the very same ecosystem that supports these rhinos. Investing in people and their opportunities alongside wildlife, is implicit in successful projects and partnerships across all the landscapes where the fo-

cus is on achieving impact at scale."

### Keeping them safe

Translocating black rhino can pose greater challenges than with their square-jawed relatives given their less tolerant, more aggressive nature, and keeping this precious cargo safe once they arrive in Zinave requires the same level of critical care. To ensure that they were in peak condition before embarking on their epic journey - the longest road transfer of black rhino ever done - they were monitored in specially constructed bomas for several weeks. Once on the trucks they were supervised by a team of veterinarians throughout, whilst armed forces never left the convoy's side.

Again, they now find themselves in reinforced boma structures in Zinave, where they will be observed until such time as the veterinary teams sign off on their release into the park's rhino sanctuary. To maximise the safety of the rhinos, they have each been fitted with a state of the art tracking sensor, enabling the live tracking of animals and assets in a central operations control room that is operational 24/7. The sensors form part of a suite of integrated security interventions aimed at keeping the rhino, and the park's other wildlife, safe. Significant investment, also with additional funding support from the German Postcode Lottery and MAVA Foundation, has been chan-

nelled into further protection efforts that includes the recruitment of 34 additional rangers who received specialist training on rhino protection, bringing the number of rangers deployed in the sanctuary and surrounding areas to 80. In addition, 20 sanctuary guards will be deployed for first-line detection of incursions. A helicopter and fixed-wing aircraft – integrated into a rapid response unit with a canine team – was introduced to boost surveillance and counter-poaching reaction capabilities.

"We are proud to see Zinave National Park emerge as a flagship protected area in Mozambique through our partnership with Peace Parks Foundation. The arrival of the iconic black rhino back into the park for the first time in four decades, marks yet another step towards realising the greater potential of the park and the opportunities it holds for growth in regional tourism, community upliftment and employment. If this is what can be achieved in one park in just seven years, we are excited about what the future holds for more transformative conservation achievements, not only in Zinave, but also the other protected areas - Limpopo, Banhine and Maputo national parks – being developed through this partnership," said Celmira da Silva, the Director General of ANAC.

# Claws out — catfight looms on lion breeder exit strategy



Don Pinnock

Lion breeders began sharpening their claws and preparing to pounce when the Department of Environmental Affairs' High-Level Panel proposed the phasing out of captive-bred lions. This latest call for a task team to come up with exit options has got breeders snarling.

I'll say it up front: farming lions is useless for anything other than providing an income for lion breeders. It's simply a business and anyone claiming it's important for wild lion conservation is peddling snake oil. That's not my view. It's just putting it more forcefully than South Africa's Biodiversity Management Plan for Lions.

The captive lion trade features everything from interaction sites where cuddly cubs can be handled, to canned hunting and animals bred and slaughtered for their bones to feed the Asian fake tiger bone wine industry. Lion breeders, of course, have a different narrative.

Their position on the phase-out proposals can be found in an article by Miquette Caalsen of Wildlife Ranching last month, calling them "a radical shift away from South Africa's successful conservation model".

It was being driven, she insisted, by activists and the media sensationalising controversial topics rather than telling the truth. This deluge was "bearing down on a vulnerable industry protecting an endangered species that may not be able to withstand the impact". It would, she said, see a "drastic decrease" in disease-free wild lions.

Let's test some of those assumptions.

**Assumption 1: Lions are endangered.**

Lions are listed as vulnerable and not endangered. South

Africa's lion conservation is successful because there are secure, well-protected areas with low risk to the lion populations, as well as conservation efforts to reintroduce and manage lions in fenced reserves. Closing of the captive lion industry will have no impact on the conservation of wild and managed lion populations in the country.

**Assumption 2: Breeding lions in enclosures is a conservation strategy.**

It isn't. A study by nine top big-cat researchers in *Oryx*, framed their findings in the headline: "Walking with lions: why there is no role for captive-origin lions *Panthera leo* in species restoration".

Here's what they say:

"Captive-bred lions may lack important local adaptations and, in the case of hand-raised animals, are selected for their tolerance of close contact with humans rather than by any natural selective process. Additionally, introduction of novel pathogens by captive animals could be catastrophic to wild populations.

"The lion encounter industry relies on animals so habituated to human presence that they can never be released."

**Assumption 3: All privately owned lions are captive lions.**

This is not true. Not all private lion owners have captive lions. Between intensive breeders and private owners of managed lions in fenced reserves is an unjumpable donga, though breeders love to claim it's an insignificant sluit and that they're all in the conservation business.

Fenced reserves containing lions are not impacted by the voluntary exit strategy. There are many avenues to generate income from private lion ownership — as long as the lions are free-roaming, doing what lions do, and not captive, fed animals.

**Assumption 4: The closure**

**of lion breeding farms will lead to biodiversity decline.**

According to Caalsen, faced with the choice between maintaining a pride of captive lions that cannot be monetised and taking an exit, many breeders "will have no choice but to turn to alternatives such as livestock or crop farming, with the consequent deterioration of biodiversity in the area".

Sweeping statements like this are designed to confuse.

Many lion-owners have large wildlife ranches or other farming operations and the tawny cats merely form a part of their wildlife income. Many are contributing to conservation and the proposed strategy will have zero impact on them and their conservation efforts.

**Assumption 5: If it pays, it stays.**

That's true, but what exactly is the "it" which stays? Facilities for the continued

captivity of lions for commercial gain, certainly. But not a healthy population of lions as a reserve for rewilding.

**Assumption 6: Lions in national parks have bovine TB and will die off and have to be restocked with farmed lions.**

According to Caalsen, if the spread of bovine TB cannot be contained, "most of South Africa's recognised lion population may be lost to conservation efforts, with serious repercussions to the global lion population".

First, Caalsen's assumption that captive lions on breeding farms are disease free — especially when kept at artificially higher densities than would be the case in the wild — is not demonstrably true.

And second, there's no evidence that bTB is a danger to the long-term survival of lions in the wild. Though present in lions in Kruger, it's found to be a problem only in lions

that are old or compromised. In fact, resistance to disease after exposure is important in building robust populations of animals that can deal with disease on natural systems.

According to the research published in *Oryx*, the widespread prevalence and limited health effects of most known lion pathogens suggests the risk of introducing novel diseases from wild founders is relatively low.

"Indeed, wild animals are potentially less likely reservoirs than captives, which may be exposed to a greater range of exotic pathogens. There is a large body of evidence showing that wild lion populations continue to be viable sources for reintroduction exercises, and we can find no reason to resort to using captive-origin lions."

**Assumption 7: If the intensive lion breeding industry collapses, it will spell the end of private lion conservation.**

This contains two erroneous ideas. The first assumes the phasing out of captive-bred lions involves all privately owned lions, which it does not (see Assumption 3). The second is that all private lions will probably be euthanised. This is a very selective reading of the government notice.

The truth is that those who take up the phasing-out offer will most likely find their way smoothed through some kind of incentives.

The to-be-appointed task team will be responsible for finding potential funders and/or other incentives to support these exits. Those breeders who don't take up voluntary exit may face tough new regulations aimed at securing the welfare of their lions.

That does not necessarily mean putting down the captive lions.

The task team will be expect-

ed to consider "circumstances under which lions may continue to be held in captivity in South Africa" and come up with guidelines to ensure the welfare of lions for any captive-lion facilities.

The truth is that there's no conservation value in captive-bred lions.

The widespread availability of wild lions, against the formidable challenges of reintroducing captive lions, cancels any need for resorting to captives. Even under the best possible circumstances, breeding lions in captivity does little to address the root causes of the species' decline in the wild.

To quote the *Oryx* study: "Given that no lions have been restored to the wild by [captive lion rewilding] since efforts started in 1999 — a period during which hundreds of wild founders have been translocated successfully — it cannot be considered a model that should be widely adopted for large felids."

Caalsen objects to the fact that captive-bred lions are not "recognised" as being part of the country's lion population. This is because South Africa's Biodiversity Management Plan for lions, which guides their conservation, does not call for captive breeding as a conservation recommendation — neither do conservation organisations involved in work with lions.

Captive-bred lions are of no value to the conservation of the species and are therefore not recognised in any national or international Red List assessments. It should stay that way.

*This article was previously published in the Daily Maverick*





# Bird flight – the incredible ‘science’ of evolution

Mike Meidlinger

**“Birds have wings; they’re free; they can fly where they want when they want. They have the kind of mobility many people envy.” - Roger Tory Peterson**

With a welcome to warmer times, so far this month, we have seen relatively stable rain free conditions, dominated by high pressure, and offering some welcome stability. The trees and grasses have dried, the remnant flowers have withered, and vegetation everywhere has shrunken into shrivelled, decaying forms.

Mornings are refreshingly mild, lacking the crisp nip of a fortnight or so ago, and which rapidly build after brunch to the heat of mid-day. Afternoons are now notably hot, but cool quickly at the first hint of twilight, offering fresh and radiant evenings. Despite the occasional gust of berg wind, we have already been through the worst and now see signs of spring everywhere, if we look closely enough.

Blackthorns and the other “Acacias of ancient history” are blooming, with each species already starting in earnest with their spike and ball shaped flowers. In a way, these are almost the African equivalent of Japanese cherry blossom. Their off-white to yellow tones wash over the landscape, and thus offer wisps of colour and fragrance which contrast starkly with the still, largely leafless and barren looking terrain.

Other signs of “new life” in action include other flowering trees, such as the nectar and activity-rich, Weeping Boer-bean, which are suddenly buzzing with pollinators like bees, flies and others. Insect life, both diurnal and nocturnal is starting to emerge again, building to their crescendo as we go forward.

Even in many of our local birds, we can note some changes. Behaviours like courtship displays, display flights and nuptial rituals are in full effect for some, as is pair-bond formation. The tone and intensity of singing is audibly increasing day by day.

As conditions improve, there are still remnants of winter out there, but the turn of the tide is undoubtedly upon us. Birds remain loosely associated within bird parties, but there is an extra energy in the air as mating hormones flurry through each species and birds become more vocal. This is alongside a flush of migrants arriving back, the first intra-Africans who quickly reclaim regions left only about one hundred days ago.

These and all birds are sim-

ply taking advantage of the good conditions expected ahead. One of the major aspects that make birds so successful is their mastery of self-propelled, self-reliant, aerial flight. Because of this, they are able to tap into optimal conditions on a local, international, intercontinental, and sometimes, even global scale.

Flight, as mentioned last month was a completely accidental benefit from the fundamental design of the scales that feathers evolved from. Nonetheless this “plunder of fortune” has allowed birds to radiate out into the vast, varied, highly specialised and rapidly-evolving group of vertebrates we see today.

The major reason that feathers can generate flight is because of their individual shape. More specifically, flight results from what that shape does to the air that is split around it while moving forwards. Fundamentally all feathers used for flight have the same shape, known as an aerofoil. When looked at, side on, the one side is heavier and it trails to a fine tip, the upper surface is curved and the lower surface is flat.

This is the same shape that airplane wings and helicopter blades look like in their cross sections. In fact, the inspiration for the design of these parts came from birds and feathers themselves. Feathers are each individual little aerofoils but the wings of birds, by no coincidence, have overall exactly the same structure too.

The physics of what happens next is quite intricate, but essentially the most simple way to explain it, is that as feathers move forward they are sucked into the sky.

An easy way to experience this principle, is to create an aerofoil shape with a hand, which can then be held a short distance out of a window of a moving car. When the right shape is created the hand rises of its own volition. Thus all that flapping does is generate forward momentum, not lift. It may sound strange, but how it works can be simplified.

As a feather or wing pushes through the air, the air particles are separated. The particles that are pushed beneath the wing travel in a straight line, thus these have less distance to travel before meeting up again, on the other side of the wing with those that were pushed above.

Those that go along the curved upper edge of the wing travel farther in the same amount of time, and thus stretch out to get to meet the lower particles. This stretching out creates lower pressure. Air always moves from an area of

high pressure to low pressure. Because there is low pressure on the upper side of the wing and relatively high pressure beneath it by comparison, the air simply moves up and takes the wing, or feather with it. Thus simply by moving forward, bird wings, comprised of feathers themselves, passively generate lift.

There are many adaptations, important to mention, that almost all birds share, out of which aerofoil design is only one. Each are vital for the ability to keep a body from succumbing to the pull of gravity, not to mention atmospheric challenges, for long periods of time.

Hollow bones allow for a light weight framework for the attachment of huge pectoral and other muscles. The airspaces in the bones themselves, as well as a number of air sacs that extend from the lungs, give birds an alien but highly efficient respiratory system. Having these, means that birds of all shapes and sizes, have a constant supply of high octane oxygen to fuel the sportscar-like efficiency that huge muscles, like the pectorals, achieve.

Bills are another flight saving gadget which have developed over time. These, alongside the well-developed gizzards in many seed-eating species, arose as a result of having a lack of teeth. The density of teeth in terms of weight, alongside their placement on the body, would have rendered flight comically impossible.

Thus, with unessential weight jettisoned, a good blood supply, and the right-shaped equipment for flight, birds have literally spanned, and in their own ways, conquered the earth. Today birds have radiated out across the globe in their myriad of forms almost entirely due to their flying and thus dispersal capabilities.

Due to the great variety of habitats birds are able to access, there have been many adaptations in wing shape. Different designs offer their bearers the opportunity to manipulate and bend the boundaries of what is possible within the environments they inhabit. There are a four broad categories of wing shape, each type offers a range of features that are both advantageous and in some cases limiting.

Those species with short-and-broad wings have the ability to explode into the air dramatically from an absolutely static position, no run-up required. These wings are found in many prey species that spend a lot of time on the ground, families such as Spurrows, Francolins and Doves have incredible lift capabilities



Lilac-breasted Roller

Image: John Edwards



Wandering Albatross

Image : Tony Dodds

but lack endurance or agility. Thus, there are some costs to bare for the benefit of instant flight.

Species that have broad wings which are also long, are those that are best suited to soaring. Soaring is the act of using wings, spread out, to passively fly and climb in altitude, often while catching rising thermal air currents. The wide surface area of this shape provides a large parasail and therefore allows these birds to take advantage of the uplift of air. Many of these species have specialised, and spread out, primary finger and alula feathers which act to limit turbulence at the wing tip. This means that individuals can soar more peacefully without too much turbulence.

Examples of groups with this broad-and-long wing-type include large raptors, Storks, Cranes, Bustards and others. Many of these are migratory over vast areas, but are restricted to travelling over land where rising thermal air currents can be found. Thermals are not found over cool surfaces like water. One of the major downsides for this kind-of design is that flapping flight becomes energetically extremely expensive. Therefore, when cold, wet or overcast conditions prevail, these species largely remain grounded. Even though they are able to fly, they choose not to, as it would be too inefficient over all but short distances.

Short-and-pointed wings are the go-to of choice for small, usually arboreal species including many passerines, like seed-eaters, and small raptors, like Accipiters (birds of prey). Overall, this type of design is the best all-rounder in terms of flight capability, compact design and ability in the air. This alongside great agility to dive between spaces with many obstacles, like branches and other vegetation.

The final group of basic wing types are those that are both long-and-pointed. In some cases, a similar design shared by a number of unrelated families for a variety of reasons. In raptors like falcons and kestrels, this design cuts through the air, offering highly streamlined flight, best illustrated when stooping in a predatory dive or hovering above a grassland. This wing shape is also found in seabirds which “bank” and “glide” effortlessly, just above the height of waves, using almost no energy at all. They do this for hundreds and thousands of kilometres at a time, as they traverse the oceans of the globe.

Despite these basic designs, when using flight for identification purposes, something incredible happens within the brain of the birder. Because we are hard-wired for picking up small, even minute differences, we are often able to discern a huge amount by observing how various species fly.

Constant factors like dipping action, patterns of movement, flapping rate, length and strength of flight, landing habitat and more can affect a birds flight pattern. All features combine to give a consistent impression which can reliably help separate one far away dot moving across the sky, from another. It sounds difficult, but it is surprisingly not.

No matter what their shape, functionalities or hindrances, wings and feathers of any kind remain a design and facet of the avian world to be admired and revered. They have allowed birds, as well as us, humanity, to dominate not just Africa, but the entire planet! This is a claim that very few groups of organisms can make, and is yet one more of the fundamental principles that fascinate about the class, Aves.

This month, while out with the binoculars, take a look at some local specialities and keep an eye to the skies for any birds. Especially if in flight, observe aspects like how each species mixes flapping with gliding. Ask questions like, do they have long flights or short ones, and where do they land, on the ground, in trees, reeds, bushes or in grass. Even those only seen in flight, if seen well, can be identified visually the old fashioned way, but this time having gleaned a little bit about the way each bird moves through the air as it does.

# Constellation : Ophiuchus, the Serpent Bearer

Ben Coley

## History

Ophiuchus is considered the forgotten sign of the zodiac, on account of the sun spending more than twice as long within it than in the neighbouring Scorpius for example. Despite this, it has never been considered a zodiac sign in history.

However, more recently, enough publicity has been created that many astrologers and magazines now include it in their profiles. This may be due to Earth's wobble (known as precession) over the past 5000 years since the zodiac's conception, and that means that the Sun's path across the sky today, does not match that which was observed by early astronomers.

## Mythology

In mythology, Ophiuchus represents Aesclepius, a medicine man trained at the hands of the famous centaur, Chiron. One day, the son of King Minos fell into a pot of honey and drowned. While Aesclepius was trying to revive the boy, a serpent appeared and Aesclepius killed it with his staff.

Moments later, another snake arrived carrying some herbs in its mouth that it laid on the back of its lifeless partner. The herbs resurrected the snake and Aesclepius then used the same technique to revive the boy.

Hades however complained to Zeus that the power of resurrection was too great for mankind and

would impact on his flow of dead souls for the underworld. Zeus agreed, and placed Aesclepius in the stars to honour his role.

A descendent of Aesclepius was Hippocrates. Hippocrates is the origin of the Hippocratic Oath that all modern-day doctors take and should conform to. A snake wrapped around a staff is also the emblem of many medical organisations across the globe, including the World Health Organisation.

## Notable Stars

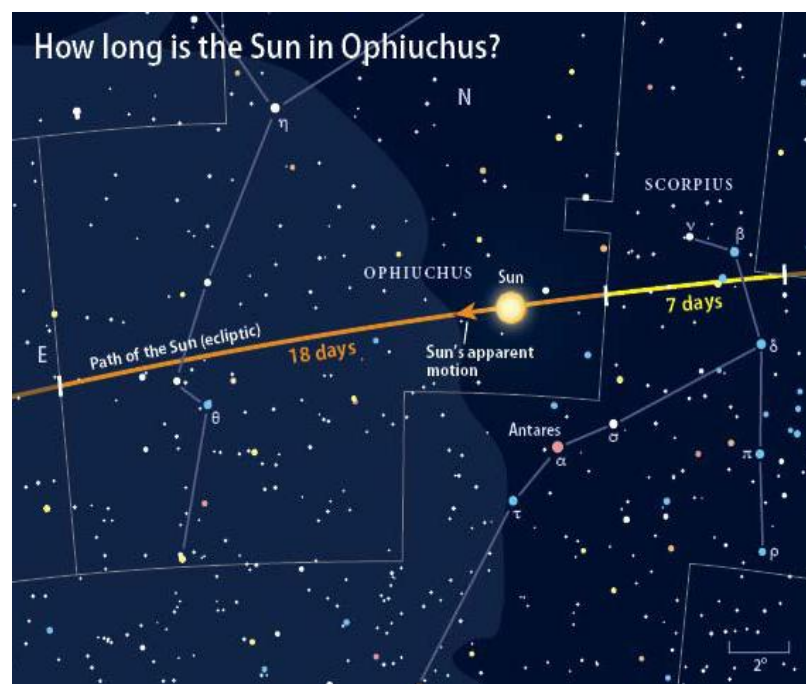
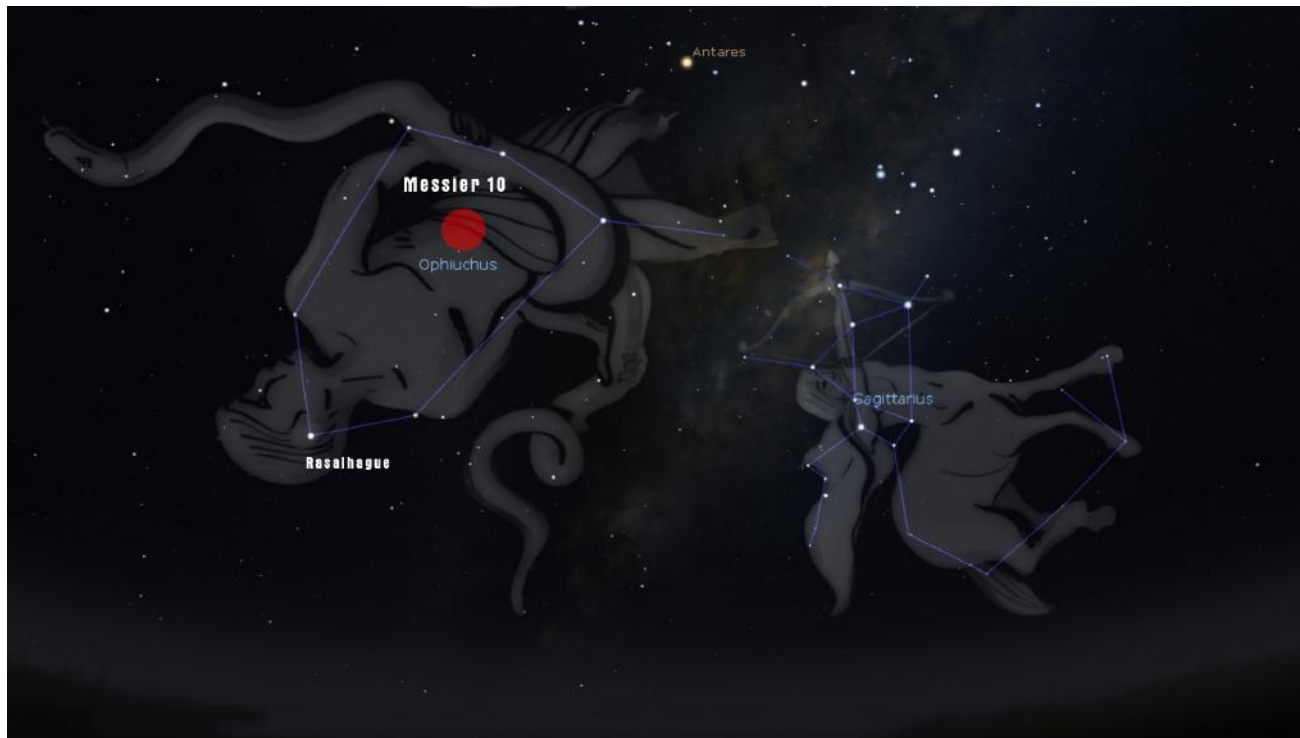
Rasalhague is the brightest member of Ophiuchus and represents the head of Aesclepius. The name comes from the Arabic meaning 'Head of the Serpent Collector' referencing its aforementioned mythology.

Rasalhague lies at around 50 light years from Earth and is believed to be a double star with an orbital period of just over 8 years.

## Deep Sky Objects

M10 is one of 7 globular clusters to be found within Ophiuchus and is easily seen with binoculars in the middle of the 'body' of Aesclepius. The cluster contains around 100,000 stars all situated about 15,000 light years away. While looking for M10, keep an eye out for another globular cluster, M12, only a few degrees away.

See *Celestial Events SA* advert on page 15 for contact details.



Ophiuchus (above), Messier (above left) and Ophiuchus Sun (above)

Images supplied: Ben Coley

# 'Tree' of the month - Combretum microphyllum – the Flame Creeper

Correspondant

This is in fact a robust deciduous climber occurring in low altitude bushveld, and often alongside rivers. I am sure that you have seen this flaming red/crimson 'canopy' and wondered (if you didn't already know) what tree it was – a common amateur mistake – and that's why I have included it as this month's 'tree'.

Well, it is in fact a creeper – and they flower in spring (August – November) with prodigious masses of brush-like flowers with bright red petals, massed along the whole length of branches. For sure you would have seen them. Only once they have flowered do the new leaves appear. It is often mistaken for a parasitic plant, but it is not a parasite. They are fast growing and spread themselves in the canopies of large trees, hence the mistake of thinking

that it is a tree.

The seeds are four winged and appear between September and January. They are green with a red/pink tinge when young, but they then dry to a pale yellowish brown.

The family Combretaceae has some 19 genera and 600 species, the largest genus in this family is Combretum, commonly known as the bushwillows. Another common genus that you may know in this family is the Terminalia, the cluster-leaves. Leadwoods also belong to this family.

Back to the flame creeper – the plant is browsed by game and forms larval food for butterflies, more especially the forest glade nymph. The flowers attract insects and an array of birds, like sunbirds, orioles, brown headed parrots, and barbets.

The roots of the plant are used in traditional medicine by some tribes to expel a retained placenta.



Flame Creeper

Image credit: Biodiversity

Tribes have also been known to use the ash from the burnt root, to mix with other ingredients, to treat

mental disorders. So be sure to be on the lookout to spot this awesome display, take time

to appreciate the beauty and vibrant colour. If you get close enough to look at the flower, look out for

the characteristically long stamens – it's well worth a peep!

# Thornybush Community opening their doors



*Local Correspondent*

The Thornybush Community was created by Thornybush in 2005. It was established as a registered non-profit organisation, with the objective of nurturing and uplifting the surrounding local communities adjacent to the protected wildlife areas.

Located on the western border of the Greater Kruger National Park, and on the boundary of the northern Sabi Sand Game Reserve, Thornybush Community has primarily focused its work in two Villages, Utah and its smaller neighbouring community of Dixie.

Thornybush Community's initial focus area was to implement food gardens, working in collaboration with a local school. It also was responsible for the funding and mentorship of an all-female local agricultural SMME business. Over the years the focus areas have expanded to encompass education, enterprise, commerce, conservation and voluntourism. Thornybush Community has found itself as a contributor in both the NPO sector and

a supporter of numerous community initiatives and partnerships.

**About Nourish Eco Village**  
Nourish Eco Village was created as a platform to link conservation needs and ideals with community goals. Sharing the same inherent values of Thornybush Community, Nourish aimed at finding integrated sustainable solutions to issues plaguing conservation, such as poverty, low education standards, lack of food security, and unemployment.

**Opening the doors for cultural tourism**

This year Thornybush Community launched the most purposeful experience for guests during their Safari - a visit to the Nourish Eco Village to engage in cultural tourism. Thornybush guests are able to learn how the various community projects support education and the livelihoods of local communities. This is another added value that Thornybush integrates into their offering, to provide an extra educated and sustainable view on the cultural side of the safari experience.

**Growing local businesses**

Pre COVID-19, a commitment was secured with

Thornybush Community and long-time loyal donor, Andersen Construction Foundation, focusing on local Enterprise Development. Andersen Construction Foundation have a keen focus on infrastructure development in rural communities. In 2019 their investment afforded the opportunity to completely renovate one of the Thornybush Community focus schools, Hananani Primary. As a direct result of that, Andersen Construction Foundation were eager to come back to South Africa and assist our communities once again. The pandemic may have delayed the project by a year or two, but it never diminished the dream of creating magic. This we were able to achieve in 2022, with a brand new enterprise centre based at the Nourish Eco Village – The SEDIWA HUB

**What does SEDIWA mean?**

SEDIWA is an acronym for Sustainable Enterprise Development in Wildlife Areas.

Nourish is focused on two main components, connecting communities to conservation, and enabling those communities to be resilient, by helping people

access income generation through entrepreneurship and enterprise. The hub will be a space where people can come to learn, access quality accredited and non-accredited training, immerse themselves in hands-on learning, grow entrepreneurial ideas and build small business skills.

As both Thornybush Community and Nourish look towards social enterprise, the hub itself will also operate with income generating components. It includes a craft shop, internet cafe, sewing centre, coffee shop and bakery. This creates income revenue for the hub itself, and is a platform for artisans to sell to a wider audience.

The hub also includes a training centre which will offer everything from basic early childhood development courses, to agro-processing, hydroponics training, financial literacy, recycled crafting, sewing workshops and health and safety courses. The list of training is guided by the needs of the local community, as well as by opportunities which arrive from the needs of the surrounding lodges and local businesses.

The Sustainable Enterprise Development in Wildlife Areas - SEDIWA Hub based on site at Nourish Eco Village (above and below).

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# Pedal Power fund raising



Sue Harwood

On the early, frosty mornings of 30<sup>th</sup> and 31<sup>st</sup> July 2022, the Olifants River Game Reserve (ORGR) hosted 50 enthusiastic cyclists participating in the inaugural “Pedal Power” event. This was organised by the board and management team, to raise funding in support of their anti-poaching and community upliftment endeavours.

Cyclists of all ages experienced the reserve from a unique perspective and, protected by APU personnel, they

encountered some of the Big 5 and plains game en route without incident. One or two minor injuries were sustained as a result of encounters with thorny bushes!

Mastermind of this great event, ORGR board member Ally Hewitt said, “The welcome function and dinner hosted at the clubhouse on both evenings provided a great opportunity for members and friends to meet and bond. The entry-fees, plus the auction of unique experiences and beautiful photos by Gerald Hinde, helped to raise an impressive amount of money for our community

outreach programs, and our continued anti-poaching efforts. We thank everyone involved and look forward to repeating this event in 2023.”

The Balule Outreach Trust (BOT), which will receive a large part of the funds raised, has been supporting sustainable projects in and around the Balule area since it was established in 2012. It is a registered Non-Profit Organisation and Public Benefit Organisation. It has established a firm relationship over several years with two major beneficiaries, namely Southern Cross School in Hoedspruit, and the South

African Medical Expeditions (SAME) after school child care centre in Sigagule Village.

Founder and Chairperson of BOT, John Anderson says, “In addition to SAME, the Balule Outreach Trust is also involved in supplying food to the Maseke Community. We also granted funding to Nourish, an NPO operating in Sigagule, for making masks during the height of the pandemic. The Trust is well on its way to accomplishing some of our ever-evolving aims, but there is much still to be done. The valuable support we receive is the life blood which determines our

success, both now and into the future.”

“Over and above the support we already provide we are always looking out for sustainable projects to get involved in, to uplift the communities around the Balule Nature Reserve. It is vital to provide correct nourishment to children especially, as poor nutrition has a negative impact on cognitive development. It is also our mission to support education relating to conservation of the areas within the region. Caring for and valuing the environment is vital to ensuring the sustainability of the region’s natural heritage,” said

Outreach Director of ORGR and BOT Trustee, Susan Harwood.

The Trust relies upon the generosity of all members of the Balule Nature Reserve conservancy, their friends and associates. The two share blocks, ONGR and ORGR are anchor donors who have committed to making substantial grants annually.

For this, the Trustees are incredibly grateful and encourage those wishing to contribute (and receive a SARS 18A tax exemption certificate), to please email Susan Harwood at [harwoods@netactive.co.za](mailto:harwoods@netactive.co.za).

# Dolerite and the Black Hills Dyke Swarm

John Roff  
Nature and Geology Guide

The main rocks in the Hoedspruit area are ancient granitic gneisses, which we looked at last month. Long after their formation, when many other deposits were piled on top of them, these basement rocks were intruded by magma - hot liquid rock - that was forced up from far below the surface and squeezed through along lines of weakness.

This would have formed outpourings of lava on a surface far above Hoedspruit, which has now vanished. Deep below, the magma that remained in the basement rocks formed Dolerite. Lines of intrusive rock like this are called sills, when their orientation is more horizontal, and dykes, when the orientation is more vertical.

Dolerite dykes are so numerous in this part of South Africa that they form what is called a dyke swarm; the Hoedspruit area is full of places where these hard dark rocks are visible and, in some places, form small hills. Collectively, they are part of what is known as the Black Hills Dyke Swarm. Seen from high above, and on geological maps, the dykes all run in a similar direction. Recent research suggests the area they cover may be 75 km across, or

more. They are evidence of a series of vast outpourings of magma onto an ancient land surface that was far above us, but has now been eroded away.

Dolerite is very high in iron, oxidises easily, and forms rusty red clayey soils. Dolerite hills therefore host communities of plants and animals that can be quite different to those found in the sandy granite-gneiss soils nearby.

The same magma from which Dolerite originates forms three different types of igneous rock, depending on how slowly the magma cooled. Deep down and very slow-cooling is Gabbro; intruded and cooling more rapidly is Dolerite; extruded and very quick-cooling is Basalt. The only difference is in the crystal size – the larger the crystals the slower the cooling.

The single most significant and widespread Dolerite event in South Africa, is probably the huge surging forth of enough magma to cover most of the sub-continent with sheets of Basalt up to a kilometre thick! Magma that didn’t reach the surface formed Dolerite – now exposed over large parts of the country, and particularly visible in the Karoo. This heralded the breakup of Gondwana, around 180 million years ago. In comparison, the Black Hills Dyke Swarm was

emplaced about 1800 million years ago - 10 times further back in time!

A few more facts about Dolerite: it is composed mainly of the minerals Feldspar and Pyroxene. Using a magnifying glass, you can usually see crystals of these minerals in a piece of Dolerite. It is used as road and railway gravel, so you’ve probably travelled over some in the last week or two.

Don’t confuse it with Dolomite, which is derived from Limestone – that’s a story for next month.



John has a continuous curiosity and an abiding passion for sharing the stories of South Africa’s remarkable biodiversity, rocks and landscapes. Based in KZN, he offers geological learning adventures throughout South Africa. Check out [www.johnroff.co.za](http://www.johnroff.co.za).



Images of Dolerite in the Hoedspruit area (above and below)  
Supplied by John Roff

## SUDOKU

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# #CREATEYOUROWNVIBE at the Bosveld Village!

Entertainment correspondent

**It was local property pioneer, Trevor Jordan, who recognised the need for a multi-purpose family venue, close to town where mum and dad or gran and grandpa can relax over a meal, knowing the children are being entertained in a safe and friendly environment.**

Inspired by the wonderful Hoedspruit climate, discussions started with Trevor’s son, Patrick, around an outdoor playground and splash zone for the younger members of our community. It was not long before pyramids of sand, sacks of rubberised flooring, brightly coloured poles, ropes, and slides were piling up at the Bosveld Village, ready for installation by the specialised contractor, Plantz Central.

The outdoor play area is colourfully marked and can withstand all weather conditions with an anti-slip, non-toxic and durable surface, below a variety of slides, climbing walls, and rope challenges. There is also a scooter racetrack, hopscotch, mud kitchen and a zip line. The play area is currently being extended to include swings, a seesaw, a trampoline, and an old vehicle wreck that will be colourfully decorated and appropriately restored. Plans are afoot for an arts-and-craft room, a multimedia PlayStation featuring kinetic games and movie section, as well as a dress-up room of imagination and a party venue.

A variety of privately owned educational and health-care facilities, a Bushveld Bookings office, as well as a small animal farm are also on the cards. Tenants for the planned corridor of shops are queuing up with a diverse range of offerings from ice creams and waffles to an art foundry!

With the fun artistic murals on the outdoor walls that have been painted by

the talented Gabriel Kailil and Sbonelo Ngomane, the scene is immediately set upon arrival. It’s time, regardless of age, to forget the stresses of everyday life, venture into a playful world, relax and have some fun!

There is a R50 entry fee charged to the playground area, the proceeds of which pay the appropriately named playground minder, Precious, who keeps an eye on the youngsters. In addition to allowing children the opportunity to create life-long memories, build new friendships, breathe fresh air, dance in the sprays, and soak up the sun, the play area keeps the kids entertained whilst parents can relax at one of the alfresco restaurants - Anne’s Cotton Club, La Baguette, and The Brewery, all of which are open daily and offer a diverse selection of fine fare.

The Bosveld Village is also a hub where older children with mutual interests can meet, share, and learn about teamwork, empathy, and fellowship. The indoor arcade offers the 12 to 17 year-olds a smoke and alcohol-free zone to test their skills on a variety of arcade machines, including pinball, Daytona racing car simulators, a Travel Bus claw machine, a variety of vending machines and a pool table.

It is apparent, however that there is definitely some skill required when trying to grab one of the enticing collection of George and Peppa Pigs, Plush Dinos, Aurora Unicorns and Squishmallow Bulldogs that wait patiently

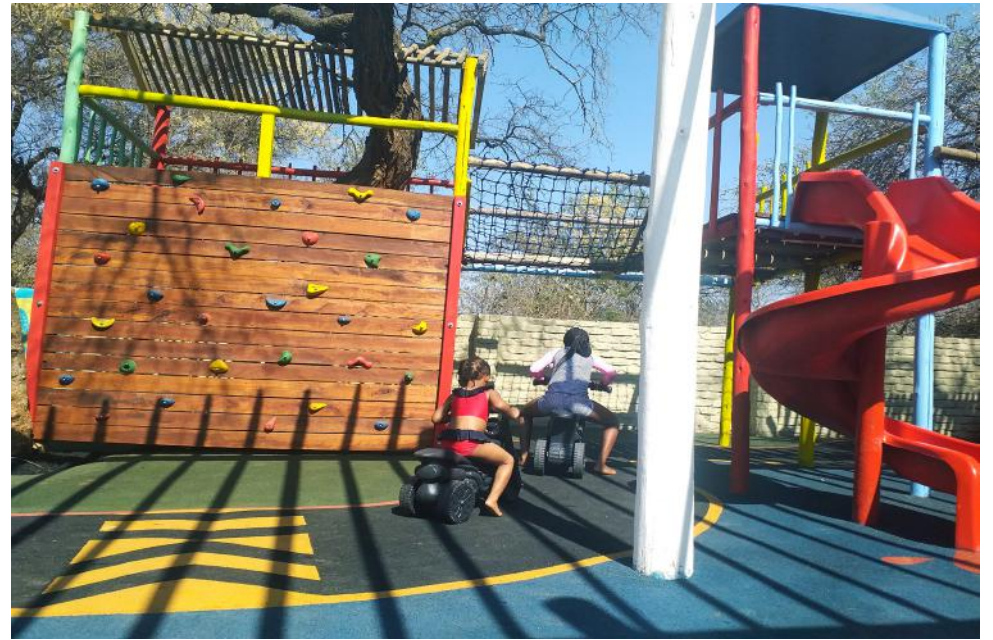
in the Travel Bus for a new and loving home.

A mini golf course (NOT putt-putt), which is open to all ages, provides a tricky and testing game with rock and water hazards to negotiate. A small putting green allows putters to practise and advance their skills with a variety of gradients designed to test and challenge. The play area is open daily from 10h00 to 18h00 on weekdays and from 09h00 to 21h00 during weekends.

There is also an on-site car wash run by William, who assists Simbi at his famous Ardmore-style pottery and curio shop, and a hair dressing salon where Rachel will attend to a bad hair day in a matter of snips. Bosveld Village has ample parking in a safe and accessible environment, a stone’s throw from Hoedspruit central, travelling south on the R40.

“The Bosveld Village is a user-friendly, family orientated centre that is being developed by the Jordan team, whose enthusiasm and vision for the project knows no bounds. As the Marketing Manager, I am extremely excited by what the future holds”, says Greg Smith.

There are many exciting events planned that offer something for everyone, and with upcoming festivals such as the Oktoberfest, market days, art exhibitions, mini-golf contests, and cook offs to name a few, the Bosveld Village are confident that their motto of #createyourownvibe will be well and truly subscribed!



Mini climbing walls, exciting scooter race tracks and jungle gyms galore - all covered with rubberised astro turf to soften any falls (above) The water used for the water park is recycled and used to water the lawn of the surrounding gardens when needed, in an effort to curb waste (below)



The play and water park at Kidz @ Bosveld Village caters mostly for younger children and is safely fenced in, shaded and monitored by CCTV cameras and dedicated child minders (above). Mud cakes anyone (below left) Images supplied



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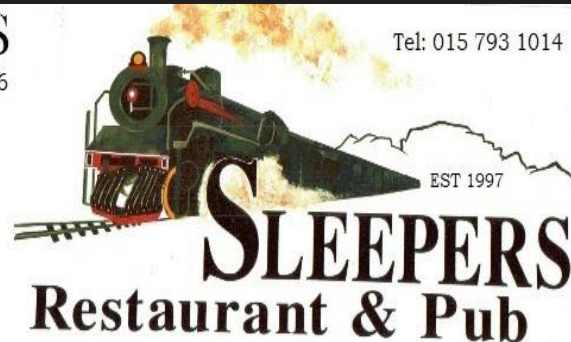
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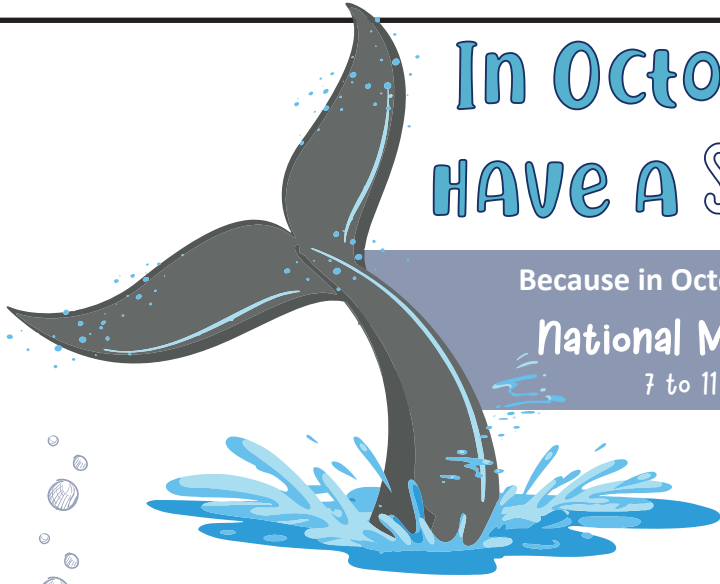
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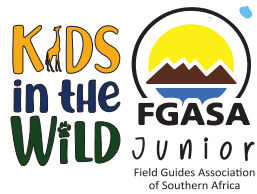
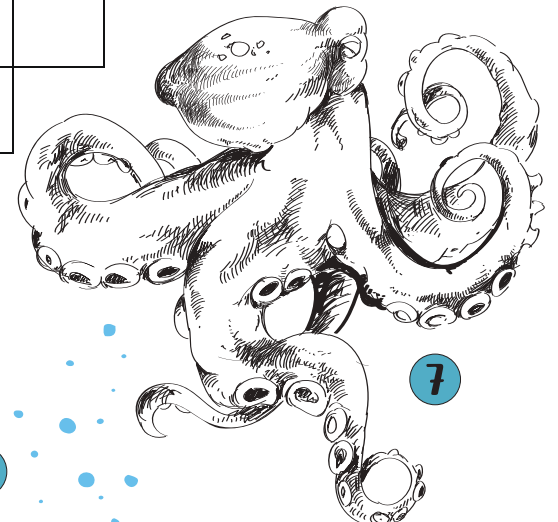
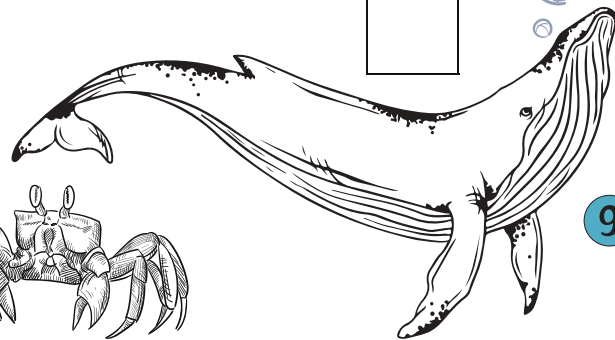
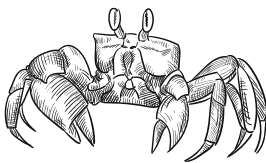
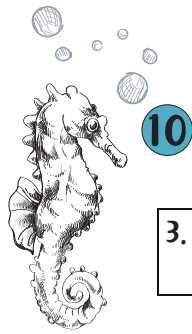
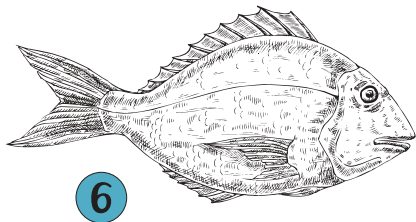
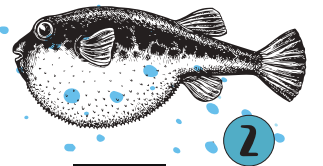
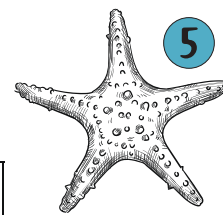
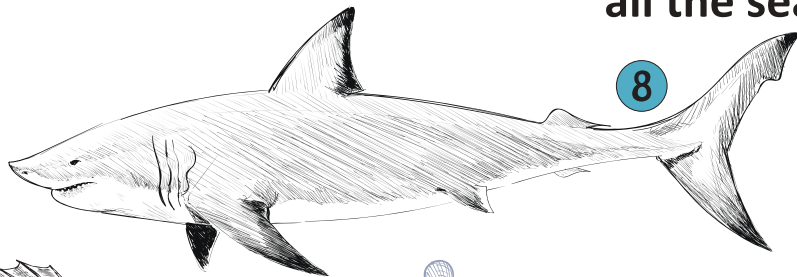
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