

# THE BARKING GECKO

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**MAGIC WORLDS**

**GREETINGS FROM THE NORTH**

**SCORPION DIVERSITY**

**SNIPPETS OF HISTORY**

**HIT THE BEAT**

**SEARCHING FOR THE DARKEST SKY**

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*"Heaven is under our feet  
as well as over our heads."  
- Henry David Thoreau,*

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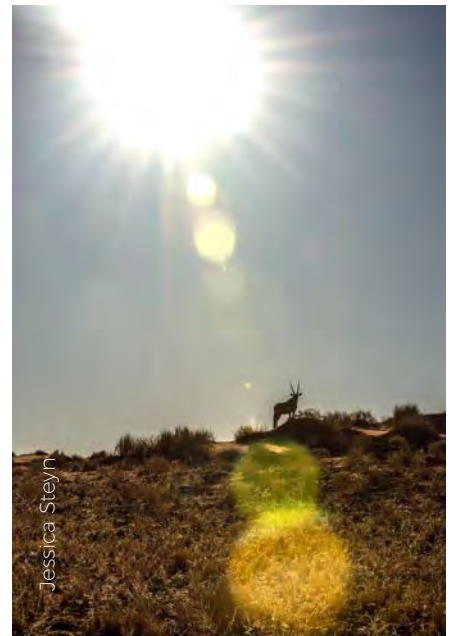
## EDITOR'S INPUT

We hope everyone had an excellent start to 2023. The summer at NamibRand has been hot, often with daily temperatures over 40°C. Some scattered, but promising rainfall was received in January and some in February, although the amounts were much less. Everyone enjoyed the rain very much, but it ended too soon, and we continue to hope for more rain. No additional rainfall was received in March, however, some surprise rainshowers fell in April.

On the Reserve, several concessionaires made renovations, and everything is looking new. Researchers have started to return to NamibRand, looking at both plants and animals.

There are times when artistic endeavors happen on the Reserve. A TV series was filmed at Wolwedans, and our dog Leia, had a role in the movie. An artistic performance took place under the stars at Wolwedans with drums and various homemade instruments and, on another occasion, Wolwedans hosted a magic show, enjoyed by all as the magicians mesmerized the audience with their tricks.

We hope you enjoy this new edition of our newsletter. We look forward to sharing the rest of 2023 with you.



Sunrise with oryx



Birdlife at the Keerweder waterhole

# GREETINGS FROM THE NORTH

Jessica & Andre Steyn

The year started off well with some significant rain received in January. Rivers were flowing and roads were underwater. There was a huge herd of springbok and oryx sighted around Bushmankoppie. New calves were seen all over the Reserve and everything started to get green. We all hoped that the rain would continue for the next few months, but unfortunately it did not. Only a few places received minimal rain in February and there was no rainfall in March. Thankfully, a few surprise showers were received in April, but these were very scattered. Please see the table for 2023 rainfall.

In late January, a film crew from Germany visited the Reserve for a few days to film part of *Das Traumschiff*, a popular TV series focused on a cruise ship traveling the world. For the production, a temporary windmill was built on the dunes overlooking the Chateau Plains. The NamibRand team supported Wolwedans as they created



Windmill at the Chateau Viewpoint

## 2023 Rainfall Figures

Property	Rain gauge	January	February	April
Kwessiegat	Kwessiegat house	22	0	12
	Cobra dam	10	0	11.5
Toskaan	Moringa	12	1	20
	Kokerboom	7	0	18
	Toskaan borehole	11.4	0	18
	Porcupine	15	0	12
Draaihoek	Draaihoek house	11	0	18
	Bushmankoppie	39	1	18
Keerweder	Keerweder house	31.6	3.5	18
	Boscia	6	0	14
Jagkop	Jagkop	3	0	13
Verweg	Zebradam	3	0	12
	Verweg house	22	2	15
Toekoms	Toekoms house	24	0	0
	Kudu water	26	3	0
Wolwedans	Kraal junction	12	0	0
	Karl's valley	12	0	0
	Dunes lodge	0	0	0
	Wolwedans village	55	0	10
	Dunes camp	0	0	0
Die Duine	Chateau	8	0	0
	Schafsberg	14	0	8.5
	DDR	12	0	9
	NaDEET centre	18.5	0	9.5
	Die Duine house	19.5	0	9.5
Stellarine	Horseshoe water	0	0	0
	Horseshoe camp	0	0	8
	Hideout house	6	0	0
Gorrasis	Gorrasis house	0	0	0
	Straussenwasser	1	0	4
Aandster	Boulders camp	0	0	0
	Swartkoppie	1	0	6
	Vista	1	0	7
	Twee Pompe	20	0	5
	Aandster house	9.08	0	6
	Kalkpomp	0	0	5
	Prosopis	2	0	5
	Grootpomp	1	0	6
	Satanskop duine	2	0	6
	Satanskop	1	0	6
Springbokvlakte	Satanskop south	0	0	5
	Springbokvlakte house	16	0	0
	Two pumps	9	0	5
	Four Tanks	12	0	5
	Park border	0	0	4
Saffier	Aandster water	5	0	5
	Excelsior Turnoff	4	0	0
	Saffier House	3	0	5
	Sonop water	4	0	5
Dina	Dina north reservoir	0	0	6
	Dina middle	0	0	9
	Dina house	18	0	9
	Dina south reservoir	0	0	7
	Dina border	5	0	7



Keerweder Pan after heavy January rains

a great filming opportunity and an excellent experience for the cast and crew. We look forward to seeing the final production.

In January, a student from the Namibia University of Science and Technology (NUST), Albertine Kandjala, temporarily joined the NamibRand team. Her work on the Reserve forms part of her Work Integrated Learning (WIL) program, which is the practical portion of her nature conservation training.

Albertine will assist the staff with various work in the field and conduct individual research projects to help her implement her theoretical learning. She is happy to be part of the team for the next six months.

Some researchers continued their work on the fairy circles on the Reserve. In addition, researchers from the University of Göttingen in Germany visited the Reserve for several days, using a variety

of remote sensing methods and existing conservation strategies to analyse grasslands. Unfortunately, the grass was already dry, which made things challenging, but they plan to return next year to undertake more research.

Researchers from the American Museum of Natural History (USA) and the Ditsong National Museum of Natural History in Pretoria stayed at the Family Hideout to research scorpions.



The C27 main road under water



Burrow pit at Keerweder filled with water



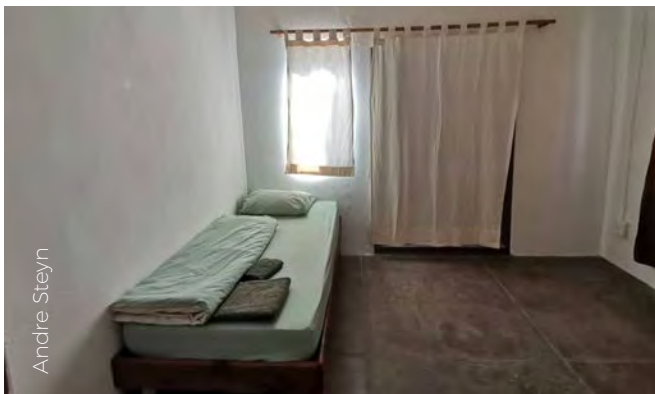
Filming at the Wolwedans Plains Camp



Kitchen renovations with the help of current NUST student intern, Albertine

The research team did not find as many scorpions in the dunes or on the plains as they had hoped, however, they were able to record four species and will return to conduct further research. Please see full article on page 11.

One of the Keerweder team tasks this year is to fix up the NamibRand Desert Research and Awareness Centre at Toekoms. The Centre was established to provide support and accommodation for local and international researchers. The house has been in use for years and it needed some renovations to ensure that future researchers can enjoy their stay.



Renovated bedroom ready for researchers

Many repairs were required, from filling cracked holes in the walls, repairing the plumbing and repainting the interior. Additional renovations were also undertaken. New cupboards were installed in the kitchen and some windows were replaced. Even the garden received some attention, with new plants added and the installation of a watering system.

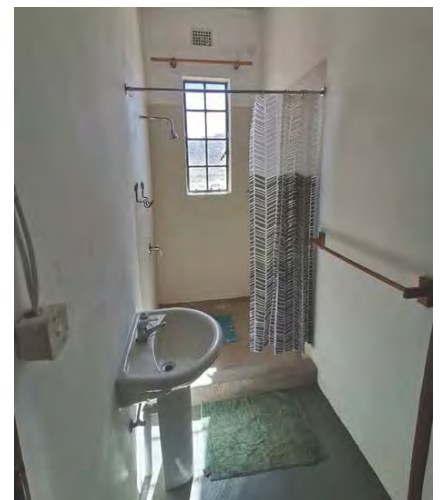
The project took quite a bit of effort, but the results are worth it. The first researchers have already visited. They enjoyed their stay and want to come back again soon.



Abraham fixing a wall



A before and after images of the bathroom renovations





# GREETINGS FROM THE SOUTH

Martin Verwey

**A**lthough we didn't receive as much rain in the south of the Reserve as we would have liked, there is still enough grazing for the animals for another year. Many animals come onto the Reserve from the Namib Naukluft National Park to drink water at NamibRand's waterholes. Throughout the summer, temperatures have often been over 40° and a little Great Spotted Cuckoo even sought shelter from the heat in the car.

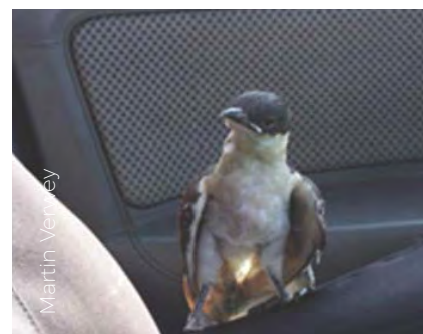
The Dina waterhole, situated at the eastern end of the Aandstêr airstrip, was closed and rehabilitation work was completed with the help of ProNamib Nature Reserve staff. This decision was taken for safety, as the animals and birds at the waterhole pose a threat to the aircraft

that use the airstrip. The windmill and the old dam remain as a reminder of the water point. To compensate, the Kalkpomp waterhole, located about 5 km southwest, was re-opened for use. Animals are now using the Kalkpomp and Aandstêr waterholes. Since then, the number of animals drinking at Aandstêr has expanded considerably. Even the giraffes now occasionally come to drink water at Aandstêr.

One of the projects we completed over the past couple of months is the installation of a new water hole at the NamibRand Family Hideout's Venus Campsite. Guests complained that there was no waterhole as there is at the other campsites. So, with the support of Keerweder staff, we helped



Animals seeking water at Straussenwasser



Great Spotted Cuckoo taking a hike in the car

the Hideout to construct the new waterhole over a two-day period.

Currently, a major project in the South is the upgrading of the airstrip at Aandstêr. The airstrip is being paved to allow different types of aircraft to land safely and is being paid for by NamibRand landowner, John Bernstein. After all the preparations with the grader and plenty of water, the first bricks were laid. The team are able to lay approximately 40-50 m of pavers per day. An estimate of 500 000 pavers is to be laid, to cover the 1.2 km long airstrip, including the two lollipop at each end.



The old windmill and reservoir stand as reminders on Dina

In early 2020, Wolwedans drilled a new borehole at Boulders Camp to supply the lodge. As COVID-19 hit soon after and tourism stopped, the borehole was never used. Finally, after three years, on 21 February, the water supply was connected. A fence was built around the borehole infrastructure to protect it from curious animals.

Many newborns have been spotted in the South, including a new giraffe. We are happy to report that animal numbers are increasing and that existing populations are looking healthy.

It is still a privilege for us to live and work in the Namib. The red sand in our shoes keeps us here.



Giraffes at the Aandstêr waterhole



Giraffes at the Aandstêr waterhole



Construction of the waterhole at Venus Campsite



Placement of the first pavers



The first section of paving



Close-up view of the paving



The new borehole infrastructure



Proud mom, Ossicone, with her new calf



Like her mother, the new calf has a slightly crooked ossicone



The never-ending beauty of the Namib Desert

# SCORPION DIVERSITY

Dr Lorenzo Prendini

Namibia has one of the world's most diverse scorpion faunas, ranking second after Mexico. This is due to the diversity of Namibia's arid landscapes and habitats, including dunes, gravel plains and rocky inselbergs. Much of the scorpion fauna is endemic, but there are still many undescribed species. In addition, much remains to be understood about the distribution and ecology of species.

Dr Lorenzo Prendini (American Museum of Natural History, New York) and Dr Tharina Bird (Ditsong National Museum of Natural History, Pretoria) are surveying the arachnid fauna of Namibia, focusing on scorpions, spiders and solifuges (also known as sun spiders, *haarskeerders* or *jagspinnnekoppe*). Their work

is supported by a research permit from the Ministry of Environment, Forestry and Tourism (MEFT).

During the first of two field expeditions to Namibia, Drs Prendini and Bird visited NamibRand for one night as part of a three-week itinerary across Namibia. Although the weather was unusually cold, a night search of the dunes and interdune valleys with ultraviolet lamps confirmed the presence of four scorpion species.

Two of these species belong to the medically important family *Buthidae*, the thick-tail scorpions. *Parabuthus granulatus* is a large, dark brown scorpion widespread across the arid half of Southern Africa and is the most venomous species in the region. *Parabuthus*

*stridulus* is a small reddish-yellow scorpion that is endemic to the Namib and also has a painful sting.

The other two scorpions found are relatively harmless, belonging to the thin-tailed family *Scorpionidae*. Both belong to the burrowing scorpion genus *Opisthophthalmus*. *Opisthophthalmus adustus* is a large reddish scorpion with black markings that constructs deep burrows on the plains and interdune valleys, while *Opisthophthalmus holmi* is a small yellow scorpion that burrows in the dunes. Both species are endemic to the Namib.

More trips will be conducted in the future, and hopefully, more scorpions will be found.



*Parabuthus granulatus*



*Parabuthus granulatus*



*Parabuthus stridulus*



The new Information Centre



Freshly painted main house and Tok Tokkie Trails Reception



New reception for Family Hideout (right) and workshop

# A SPRUCED-UP DIE DUINE HOMESTEAD

Andreas Brückner

**T**he Die Duine homestead, owned by Albi's Arche Trust (AAT), is home to the staff of NamibRand concessionaires Tok Tokkie Trails and the NamibRand Family Hideout, as well as NamibRand's educational partner, NaDEET.

For many years Die Duine has functioned as an operational base without much of an identity of its own. Recently, all three organisations put their long-term commitment

to the homestead and plans into action, working together to complete extensive renovations and additions.

NaDEET secured funding for a new office block and an information centre focused around the beautiful old camelthorn, where the unsightly reservoir used to be. A central reception area was added and together these changes now make Die Duine much more appealing.

A new workshop was built as a combined effort by all residents, and to finish the renovations, AAT decided to match the new colour scheme by repainting the old main dwelling and staff quarters.

One of the rooms in the main house (with a private bathroom and separate entrance) has been fitted with a small kitchenette so that AAT, or one of the resident organisations, can now also host one or two guests on a self-catering basis.



The garden at the new Operational Hub



Freshly painted staff quarters

## FROM THE ARCHIVES:

# KEERWEDER - SNIPPETS OF HISTORY

FROM THE SON OF DAAN TRUTER

Achim Lenssen

**D**aan Truter who now lives in Windhoek, was born on Keerweder and told us the following history.

In 1942, his father, Johannes Truter, was granted a grazing license on the farms Jagkop and Vêrgenoeg, (the original name of the present day Keerweder). He was a driller and sank many boreholes in the area. At first, he could not find water on Vêrgenoeg, as he did not drill deep enough, which he only discovered later. Money ran out and he left the farm to work in a garage in Bethanie for a while. After his return he found water and decided to name the farm "Keerweder", which translates as "Came Back Again". In 1947, he purchased the farm Keerweder, but not Jagkop, as it still had no water.

The original homestead was at the base of the Nubib Mountains, but the borehole was not strong and is now dry. The wind at times was unbelievable. Daan Truter tells of his mother once holding onto a laden wheelbarrow for fear of being blown away. From here, his father saw that lightning often struck at a particular spot in the plains. He deduced that it must be because of an underground aquifer, where he then drilled, but did not find water on the first attempt. In 1951, something made him

return to this site, where he drilled deeper and there it was - the strong aquifer he had suspected, 150 metres below the surface.

During the latter half of 1952 and the beginning of 1953, a new home, the present Keerweder house was built to a plan that his mother had seen in a magazine which had appealed to her. Stock farming was difficult on the edge of the Namib, there were always leopard in the mountains and spotted hyena (wolves to the farmers) occasionally came in from the west. Droughts were a regular occurrence. Daan Truter build the present guesthouse himself using a shuttering system filled with a mortar mix. From 1969 to 1972, when the district road 826 was constructed in the area, he worked for the Roads Department.

He also told us about the lonely grave close to the Nubib Mountains, whose cement headstone is barely legible, although the grave is still neat. On it is the name "Maria Prins, born 02.05 .1931 and died 14.12.1956". She was the wife of James Boois, who was in the employ of Johannes Truter. She died of tuberculosis and her husband buried her in this beautiful place.

Johannes Truter drilled several good boreholes on Keerweder after he found how deep the water was. However, towards Jagkop the formations are soft, being solidified dune sand and after a time the holes had a tendency to collapse. This also happened to the borehole on the western edge of Keerweder, where the water table was at 226 m (742 feet). It collapsed in March 1964 and the area is now supplied by pipeline from the house.

In April 1986, the Truters sold Keerweder to Pieter Coetzee, who in turn sold it to C. Jacobs and finally to Wilfried Achterfeld in July 1993. Christopher Braun, Wifried Achterfeld's son, inherited the farm in 2002 when his father passed away.



Drilling machine used in the 1960's

Peter Bridgeford

# HIT THE BEAT

## A CELEBRATION OF CULTURE, DIVERSITY, AND UNITY IN THE HEART OF THE NAMIBRAND NATURE RESERVE

Cecilijah Oletu Nghidengwa & Reinhold Mangundu

As the rhythms of the drums echoed through the endless plains of Namibia, people from all corners of the world gathered to celebrate diversity and unity. The beat of the drums and the harmony of the music brought together individuals of different backgrounds, cultures, and languages, reminding us that in the end, we are all connected by the universal language of music and the arts.

Founded in 1999 by Simone de Picciotto, Hit the Beat has been joining individuals from diverse cultures on a common stage. Hit the Beat is not just an organization, but a movement that has been successful in promoting cultural diversity and nurturing young

talent in Namibia, South Africa and Germany. It is a reminder that the power of the arts transcends borders and unites people from all walks of life.

During 17 - 20 February 2023, Wolwedans EcoVillage hosted the second Hit the Beat workshop, themed "Magic Words." Magic and art have always been linked as a form of creative expression. Artists often draw inspiration from magical themes and use their art to explore the mysteries of the universe.

Participants from different fields and backgrounds joined together to explore the world of visual and performing arts, music and poetry. Through a series of fun and

engaging activities, they learned to drum, dance and make music using various instruments.

The workshop created a safe space for participants, mainly staff and Desert Academy students, to express themselves creatively and explore their imaginative and cultural capabilities, inspired by the beautiful surroundings of Namibia. The workshop culminated in a night of vibrant energy as participants showcased their talents, performing spoken word poetry and singing powerful songs under the stars.

One of the songs, "Onele Yetu," paid tribute to the diverse culture and beauty of Namibia, reminding us of the importance of love, peace and unity in our country. The event was a beautiful celebration of diversity and a reminder that together, we can build bridges and connect under the stars.

Hit the Beat is becoming an annual cultural event at Wolwedans, bringing individuals together and promoting a culture of togetherness. As we navigate through the challenges and uncertainties of the future, events like these remind us of the power of the arts and music to heal and inspire us.

At Wolwedans we believe culture, arts and sustainability are interrelated and can support each other in various ways.



Participants using different instruments to create sound



Desert Academy students drumming

By recognizing and promoting the connections between these three areas, we can create a more sustainable and culturally diverse world. We look forward to hosting the next Hit the Beat workshop in 2024, with an invitation to our entire Reserve family to join with us to continue celebrating diversity.

For further information on the event, contact the following:  
 Cecilijah Oletu Nghidengwa, Happiness Coordinator: [happiness@wolwedans.org](mailto:happiness@wolwedans.org)  
 Hit the Beat: [info@hit-the-beat.org](mailto:info@hit-the-beat.org)  
 The AridEden Project: [www.arideden.org](http://www.arideden.org)  
 Wolwedans Foundation: [www.wolwedans.org](http://www.wolwedans.org)

*"Hit the Beat is cultural diversity in action. Through drumming, dance music and arts, hearts from many different corners of the globe beat in unison. This Hit the Beat spirit affects other people too – we take to the stage and let the audience share the fire of our enthusiasm."*

## The Desert and its healing charms

By Reinhold Mangundu

*The desert is a wonderland,  
 A place to heal and understand,  
 Its beauty vast, its spirit strong,  
 A place to go when life feels wrong.*

*In solitude, we find our way,  
 Reconnecting with our souls each day,  
 Finding peace in the endless sand,  
 Our worries lifted by its gentle hand.*

*The future calls, and we must act,  
 To protect this land, our sacred pact,  
 For in its silence, we hear the cry,  
 Of a world in need, where hope can thrive.*

*So let us cherish this desert land,  
 And all it offers, with heart and hand,  
 For in its beauty, we find our way,  
 Reconnecting with our souls each day.*



Participants entertaining guests at the Wolwedans amphitheater

# LIFE IN THE DESERT

Albertine Kandjala

Since I was young, I have been interested in animals and nature. I've had two cats in my life, and my interest grew more and more during my time with them. I am working on my bachelor's degree in Natural Resources Management at the Namibia University of Science and Technology (NUST). I am currently completing my internship at NamibRand, and I must say, this Reserve is truly one of a kind.

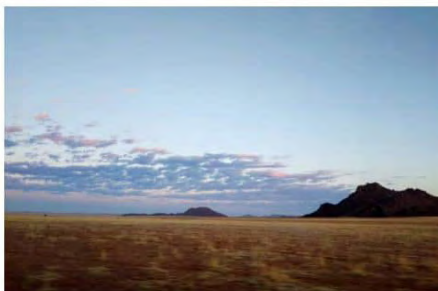
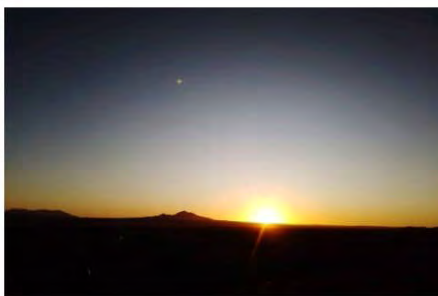
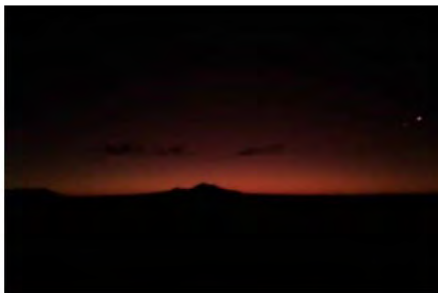
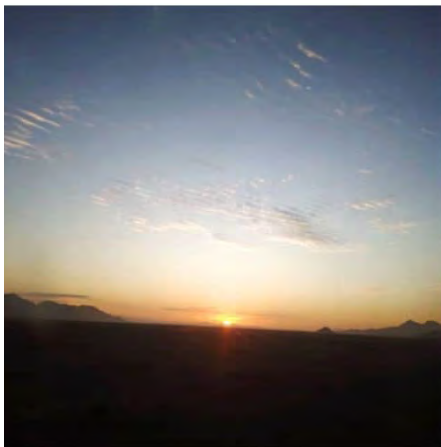
I have been stationed at Keerweder since January 2023. The entire conservation staff, Mrs Jessica, Mr Andre, Mr Abraham and Mr Elton, are open and honest and always fair in everything they do. I have been here for only three months and have learned so much from them. I am confident that this experience will benefit me in the future. They are encouraging, supportive and they have taught me so much in

such a short time.

The desert is such a beautiful place, with amazing landscapes, sunrises and sunsets. I always enjoy sitting outside my room just before sunset and admiring the stunning view.

One of the activities I participated in was to support some researchers from Germany with their work measuring vegetation. The researchers, Dr Daniel Wyss, Mr Paul Bantelmann and Professor Martin Kappas, were all so instructive and supportive when we were in the field collecting data. I honestly learned a huge amount about grasses in the one week I worked with them. We measured vegetation, specifically grasses, to create a vegetation spectrum map showing different grass species and their distribution across both the NamibRand Nature Reserve and the ProNamib Nature Reserve. This was one of my best experiences so far and I learned so much.

I cannot forget to mention the warden's dog. Even though I am the only intern at NamibRand this year, I've never been bored because I spent most of my time with Leia. She is such a kind and lovely dog. I love that she is so comfortable around me and always plays catch with me. She makes Keerweder feel like home.



Albertine Kandjala

Sunsets and sunrises at the Keerweder homestead



Albertine Kandjala

Fieldwork with Paul Bantelmann, Dr Daniel Wyss and Professor Martin Kappas



Albertine Kandjala

Goofing around in the field



Jessica Steyn

Leia helping researchers collect grass biomass for measurement from a research quadrant

# MAGIC WORLDS

## WORLD-CLASS MAGICIANS BRING

Reinhold Mangundu & Cecilijah Oletu Nghidengwa

As the sun set over the NamibRand Reserve, something enchanting was about to happen. Three world-class magicians - a mentalist, a storyteller, and a shapeshifter - were poised to take the audience on an unforgettable journey of magic and wonder.

Magic was in the air as three renowned magicians, Harry Riegel, Janis von dem Borne, and Gaston Florin, took the stage in front of the entire NamibRand family.

The birth of the Three Magicians Magic Words Tour throughout the country was sparked when Janis visited Namibia in February 2022. He then convinced Harry, who grew up in Windhoek, and Gaston to join him on a journey of pure wonder. Each magician brings their own unique style to the stage, with Janis delighting audiences with his calm voice and impressive illusions, Harry captivating with his mind-blowing mentalism, and Gaston transforming the way we see the world through his expertise in

body language and poetry.

With Wolwedans serving as the stunning backdrop and the starry sky above, the magicians embarked on a journey that would captivate the audience and leave them begging for more.

Each magician brought their own unique skills to the performance. Harry Riegel, the mentalist, dazzled with his mind-reading abilities, while Janis von dem Borne, the master storyteller,



Gaston watching Janis perform at the Wolwedans Amphitheater

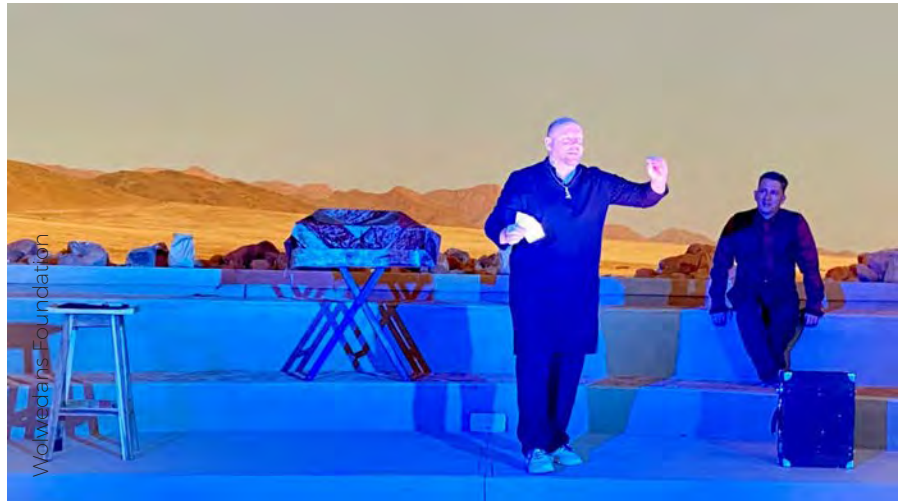
# WONDER TO NAMIBRAND

weaved together intricate tales that transported the audience to far-off lands, even as far as Marrakech. Gaston Florin, the shapeshifter, delighted with his uncanny ability to transform objects and create something out of nothing.

This special performance wasn't just a show of magic for magic's sake, however. The magicians had an important message to share, and they used their tricks and illusions to convey it. The key themes of time, turning nothing into something, and making the impossible possible were interwoven into their acts, leaving the audience in awe and contemplating what they had experienced long after the performance. In addition, the magicians incorporated a message of sustainability, showcasing how small actions can create a big impact through a trick involving the recycling and reusing of a cooldrink can performed by Harry. It was a show that not only entertained, but also inspired reflection and action.

Above all, the magicians reminded us of the power of imagination through their words and tricks – they encouraged us to think differently and look at the world with fresh eyes.

The show was a perfect



Harry the mentalist

reflection of the values held dear by Wolwedans – embracing culture and sustainability. So, let's take a cue from these magical performers and

embrace the wonder and imagination that surrounds us every day – in everything we do and in our Wolwedans way, now and into the future.



Janis the storyteller in action



Viktoria Keding introducing the staff development workshop in February at the NaDEET Urban Sustainability Centre in Swakopmund



Puff adder caught and released at NaDEET Base in March 2023

# NEWS @NADEET

## Andreas Keding

In January 2023, NaDEET staff met in Swakopmund at the Urban Sustainability Centre for a three-day, action-packed staff development workshop. We had a great programme with activities ranging from administrative, informative, and educational to just plain fun. Highlights included nature yoga led by one of our Trustees and a round of miniature golf. Ultimately, the results were

a cohesive staff group with a well-developed plan for the year.

After the workshop, the Urban Centre team jumped right into hosting school classes for their popular three-day school programme in Swakopmund. The NaDEET Centre Team headed back to the NamibRand Nature Reserve, where they put their efforts into the garden and

infrastructure to prepare for the visiting groups to start arriving in March.

NaDEET Centre requires ongoing maintenance, but we had a bigger project - to renovate the "Water Wise Washroom" floors. We needed a cost-effective plan because the old floors were cracking and deteriorating. The decision was taken to not to rip



Eben Muzorogondo revamping the Centre's "Water Wise Washroom" floors



Simon and John discussing tactics at the NaDEET mini golf tournament

out the old floors, but rather to put a new plywood layer onto the old one. Our small tech team was able to refurbish the floors very quickly and have a high-quality finish for all of the participants expected this year. We also replaced the old coke bottle skylights in the toilets. After almost eight years of use, the original ones were ready for replacement. In addition, the

whole of NaDEET Centre received its annual oil and varnish to combat the effects of the dry desert climate.

As the summer temperatures soared, we received several cold-blooded visitors at our operational base. In total, we caught and relocated seven snakes within one month. This is a very good sign as the team

hadn't seen snakes for several years during the drought. We now see the ecosystem balancing itself out again after the better rains received last year. We hope they will keep the rodent population under control and our food supplies safe.

We wish everyone a successful 2023. Thank you from the NaDEET Team.



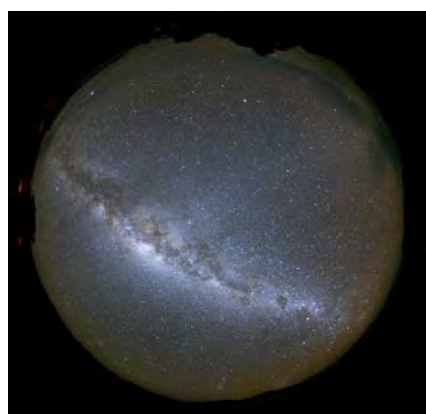
(All photos by Andreas Hänel)

The Milky Way centre rises over Keerweder, while the landscape is illuminated by the moon (exposure data: 30 sec at ISO 3200 with a 1.1.8/25 mm lens)

## Andreas Hänel

Fachgruppe Dark Sky der Vereinigung der Sternfreunde und Kommission Lichtverschmutzung der Astronomischen Gesellschaft (Dark Sky Association of Star Friends and the Light Pollution Commission of the Astronomical Society)

Over the past several years, amateurs from the astronomical working group of the Natural



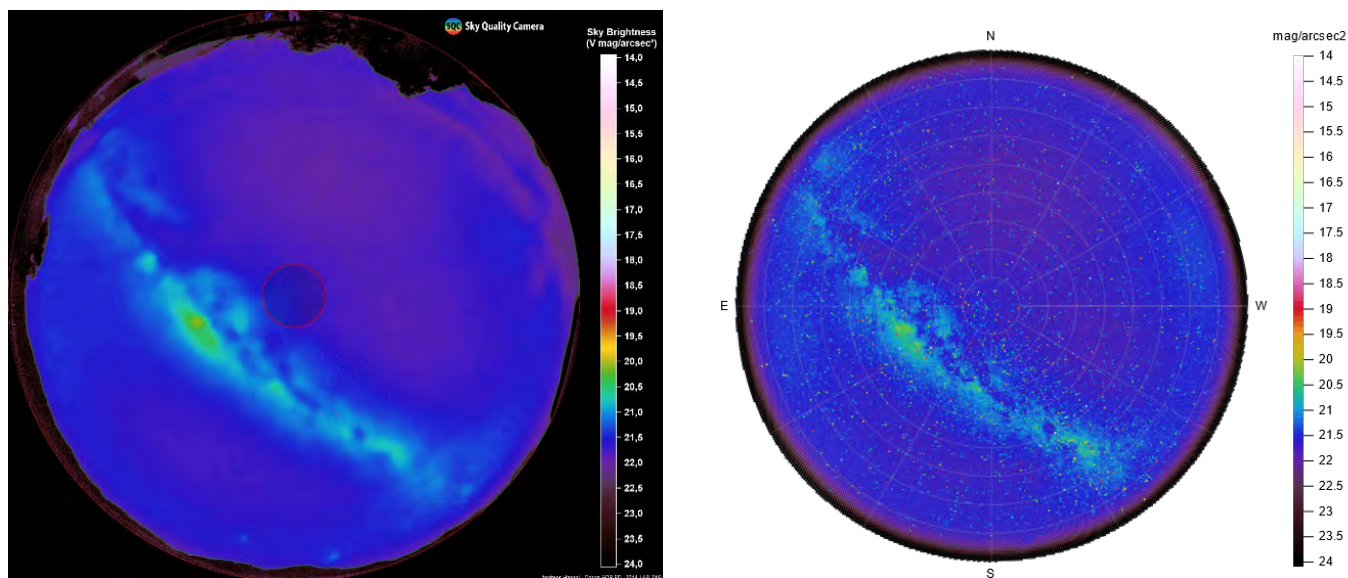
Full sky picture with some clouds at the northern Sky (top) (exposure data 1:3.5/8 mm fisheye lens, exposure time 120 sec at ISO 3200)

Science Association Osnabrück (Naturwissenschaftlicher Verein Osnabrück) organized expeditions to the central lines of solar eclipses in Spain (2005), Turkey (2006) and the USA (2017). After the last excursion, the wish arose to travel to the southern hemisphere to explore the southern Sky. Due to the COVID-19 pandemic the plan was cancelled twice, but in 2022 the group could finally fulfil its wish.

I have visited many dark-sky places and measured the sky brightness, so I was looking for places without any light pollution caused by artificial light, which I expected to find in Namibia. Two members of

our group stayed for the entire duration of the excursion at the Rooisand Desert Ranch, which provided equipment for astronomical observations, in order to photograph the southern constellations. The others members of the group visited for one week at the Ranch and then travelled through southern Namibia for the other two weeks to visit tourist highlights and observe the sky from several locations. We planned a stop at NamibRand, the first International Dark Sky Reserve in Africa.

I have measured sky brightness at many dark sky places worldwide, mainly in the domain



Left: Sky brightness map derived from the fisheye picture - the red circle corresponds to the measurement cone of the SQM-LU. Right: The sky brightness map modelled from the Gaia data for the same observing time (GAMBONS).

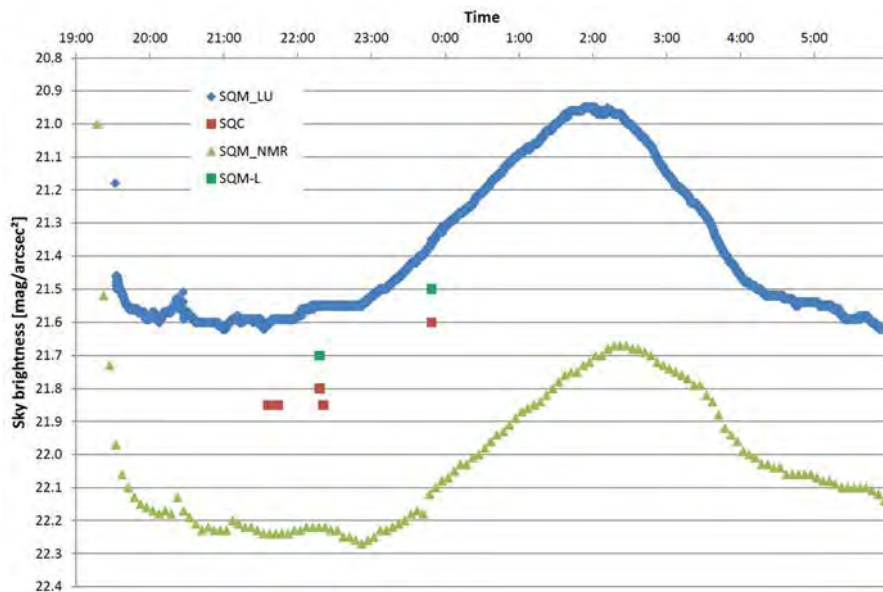
of 21.5 – 21.8 magnitudes per square arcseconds ( $\text{mag}/\text{arcsec}^2$ ). This unit of measurement goes back to the ancient Greeks, who defined the brightest stars as having a brightness of magnitude 1 and the faintest, just visible stars at a magnitude of 6. This scale was then transferred to measure sky brightness. In a bright city, it is about 16 – 18  $\text{mag}/\text{arcsec}^2$ , while the darkest sky has a brightness of about 22  $\text{mag}/\text{arcsec}^2$ . I wanted to measure how dark the sky is in places without any impact from artificial light.

Arriving at the remote Keerweder on the evening of 3 June 2022 was impressive. It was an oasis in the middle of the desert, surrounded by mountains that were coloured by the setting sun and the dusk sky. Unfortunately, some thin clouds formed in the northern sky, and the moon also disturbed the darkness during the first hours of the evening.

I use different instruments to measure the sky brightness as each instrument has advantages, but also drawbacks. The simplest method is to use a handheld Sky Quality Meter SQM-L, which is the instrument used at NamibRand. My measurements during the evening are represented in the graph below as the dark green points. Another method is using an automatically registering Sky Quality Meter SQM-LE (with Ethernet interface). One of these instruments is installed at Keerwater and takes measurements every five minutes, which are then uploaded and published on the Globe at Night - Sky Brightness Monitoring Website. These measurements are represented on the graph below as the light green triangles. I also installed an SQM-LU (with USB interface) on the roof of our vehicle, which also took measurements every five minutes. These measurements are represented by the blue diamonds on the graph.

In addition, I took photos with a fisheye lens. Because the camera is calibrated, it is possible to derive sky brightness maps of the sky using Sky Quality Camera software. The brightness measured in a 20° circular red diaphragm on the photos corresponds to the measurement cone of the SQM-L focused on the sky. In this way, I can use different instruments to intercalibrate and derive more reliable measurements. The brightness values from the Sky Quality Camera are assumed to be the most reliable values (represented by red squares on the graph).

The graph of the measurements taken on the night of 3 – 4 June 2022, shows that the sky brightness increases during the night. This is due to the bright Milky Way which passes through its zenith and decreases as the Milky Way moves lower. It can also be seen that the different instruments measure



Measurements during the night of 3/4 June 2022 at Keerwater. Blue diamonds: SQM-LU on the vehicle roof, bright green triangles: SQM-LE on the roof of Keerwater office, dark green squares: handheld SQM-L measurements, and red squares: sky brightness derived from all-sky pictures as simulated in the 20° diaphragm



Southern Sky with the Milky Way and the two Magellanic Clouds illuminates the desert (1:2.8/6.5mm fisheye, 60 s, ISO 3200)

different brightness. My SQM-LU measures about 0.25 mag/arcsec<sup>2</sup> brighter, while the SQM-LE from Keerwater measures darker. As this instrument is quite old, this might be due to a change in the calibration factor, which can be adjusted by subtracting 0.45 mag/arcsec<sup>2</sup>. The corrected values correspond to the measurements taken with the handheld SQM-L on the NamibRand Reserve, as published several times in the The Barking Gecko.

The brightness of a naturally dark sky without any artificial light can also be calculated for every place on Earth from the stellar data collected by the European Space Agency's Gaia satellite. Comparing this model data with our fisheye pictures reveals a great similarity, confirming that the view of the nocturnal sky at Keerwater is not influenced by artificial light.

We found that overall, the skies in southern Namibia are very dark. Comparing the measurements showed that the readings didn't change much over the region, as long they are not taken too close to a settlement. The mean measurements of the dark sky were about 21.9 mag/arcsec<sup>2</sup>, a characteristic value for a naturally dark sky. The starry sky has great value for the region and should be conserved through sustainable lighting. The next day our group visited the NaDEET Centre, and we were very impressed to see how the use of such lighting, among other ecological aspects, is taught to young children staying at the Centre.



Jessica Steyn

Oryx in the dunes



*The editors would like to thank all the contributors to this edition of the Barking Gecko. Many thanks to Vicky Human for her support and layout skills.*

*This newsletter is for our readers, friends and colleagues of NamibRand. We welcome any ideas, input and feedback you may have.*

**KINDLY NOTE:**

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