Issue 3, March 2021

BIODIVERSITY & ENVIRONMENT AFRICA

HEALTH & WELLBEING

strong foundations for gut health

BIODIVERSITY FOCUS

the iconic giraffe

interview with **GREEN BASKETS**

VIEWPOINT

FOOD FOR THOUGHT

Cacao tree farming -Freepik

Cover image: Katja Philips from Green Baskets, Healthy Lifestyle Boutique

Photo: Warren Schmidt

MISSION

Biodiversity & Environment Africa (publication) strives to present accurate and informative news on relevant biodiversity and environmental topics from across the African continent. We aim to disseminate academic research findings and communicate this in an informative and understandable format to our readers, as well as highlighting important **conservation and environmental issues.**

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Food for Thought


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In this issue of Biodiversity & Environment Africa we touch on food. Food, for human consumption, is interwoven with, and deeply connected to, biodiversity and the environment. They are not separate, but often compete against each other in many ways. An essential and integral part of food production is water. In sub-Saharan Africa, water supply is increasingly becoming unpredictable. Climate change is leading to irregular and unseasonal rainfall patterns, prolonged droughts, and heavy flash flooding. All these factors are tilting food production in Africa into the unknown.

Several studies have predicted that Africa's human population is going to double by the year 2050. That's less than 30 years from now. Famine is already commonplace across many African countries. What will the picture look like 30 years from now?

In a report published in 2020 by the Food and Agricultural Organization of the United Nations, International Fund for Agricultural Development, UNICEF, the World Food Programme, and the World Health Organisation, found that around 690 million people in the world go hungry each day. Although this represents less than 10% of the global human population, it is still a sobering thought, especially when overindulgence is common in many places. This figure, however, does not reflect the additional millions who are malnourished and not eating healthy diets. If moderate and severe food insecurity is combined, an estimated 2 billion people don't have regular access to safe, nutritious and sufficient food.

The current Covid crisis may exacerbate the problem and preliminary data suggests that a further 83 to 132 million people may be added to the global figure of undernourished people. Ironically, this report has also shown that adult obesity is on the rise. This is likely due to the unsatiable demand for fast and processed foods, as well as higher intake of refined sugars. Obesity often leads to diabetes and other health complaints. There is food production, and there is healthy and nutritious food production.

Interestingly, I have always wondered why eating healthy is so expensive and this is a question we will pose to our relevant health and organic food experts. This sentiment is echoed in the above-mentioned report where it was found that eating healthy can be up to five times more expensive than diets that meet only dietary energy needs through a starch staple. This is not only about meat/protein products, but also found with many fruits and vegetables. This can be demonstrated clearly with the price of various nuts, which provide a range of essential oils, vitamins and protein, but which, in terms of price, is insanely nuts (excuse the pun!).

An important factor in food production is sustainability. In recent decades we have seen a surge in large-scale mechanised food production. Mass irrigation and damming projects have altered rivers and other waterways, and wetlands and floodplains have been drained, often to the detriment of communities and biodiversity living downstream to such developments. Sedimentation is another prime example of some farming methods. There has been considerable debate around cattle and dairy farming (or ranching) and its impact on the environment, notably around increased nitrogen levels, use of rangeland for grazing, as well as other detrimental environmental impacts. As a result, there has been increased social advocacy around turning to veganism, or becoming vegetarian, and reducing meat consumption. However, it must be stressed that vegetational crop production can be equally as harmful to biodiversity and the environment in terms of water consumption, land use, application of herbicides and pesticides, and the debate around genetically modified organisms (GMOs) to increase production and provide resilience against climate change.
As stated in the FAO (Food and Agricultural Organization) report:

"Not all healthy diets are sustainable and not all diets designed for sustainability are always healthy. This important nuance is not well understood and is missing from ongoing discussions and debates on the potential contribution of healthy diets to environmental sustainability."

The issues around food production and healthy diets is extremely complex and will vary between regions. Water security, and water consumption, is a major factor in food production. Providing enough nourishment for a burgeoning human population, and in association, the need for mass-producing agriculture, is another important issue to consider.

In addition, there is the exploitation of our marine resources. What once appeared to be an endless sea of protein is now becoming increasingly threatened through massive trawling and fishing operations. This is leading to increased tension between nations, as well as small local communities reliant of marine resources for their daily living. Overharvesting takes place from the local bays and ports right through to the open ocean. It appears that illegal trawling and poaching is

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Sustainable farming -Freepik

prevalent and growing in vast oceans that are difficult to police. When offenders are caught, the penalties can often cause regional conflict between governments. There are still many maritime territorial disputes unresolved, and this leads to strained diplomacy and potential conflict between nations, as we have witnessed in places such as the South China Sea.

In stark contrast to famine and malnutrition, a recent report published by the United Nations Environment Programme highlighted how in 2019, consumers threw away nearly a billion tonnes of food! That's approximately 17% of all food purchased. This demonstrates how unequal food distribution, or access to food, is around the globe. 61% of this waste is generated from households. That's food for thought. (Link to this article listed below under References.)

In recent decades across many parts of the world, people have been flocking to cities in the hope of finding better work, social, health and living opportunities. This, paradoxically, leads to increased poverty, housing shortages, service delivery shortfalls and increased crime. Perhaps we need to invest much, much more into rural communities in terms of security, health and education and teach more people to become self-sufficient in growing and producing their own produce. Of course, land ownership is another crucial factor that needs to be addressed and which will play a critical part of future food production in Africa.

Small-scale farming, organic farming, hydroponics, aquaponics and associated practices are worth investment and investigation, but whether these practices can provide enough nourishment, and at an affordable cost to the poor, needs further review.

In this issue of B & E Africa, we touch on the real basis of a healthy diet and in forthcoming issues will investigate the relationship between food, the environment and biodiversity.


Green Baskets

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VIEWPOINT RESEARCHED AND WRITTEN BY: Warren Schmidt

Warren Schmidt holds a Master of Science degree in Ecological Sciences awarded by the University of KwaZulu-Natal, South Africa. He has three decades of experience in ecology, conservation science, invasion biology and herpetology. He has worked as a journalist, magazine editor, and lecturer, and has presented numerous talks, seminars, and lectures.

The Yellow Mongoose Cynictis penicillata is still commonly encountered on the fringes of urban towns. This individual was photographed near the town of Alberton in Gauteng Province.

The African Spoonbill

This large, all-white bird with its bright reddish pink bill, face and legs, looks like it belongs in the realm of cartoon characters. Photo: Warren Schmidt.

The African spoonbill is almost as iconic around wetlands and waterways as the Hammerkop. This large, all-white bird with its bright reddish pink bill, face and legs, looks like it belongs in the realm of cartoon characters. The Spoonbill is closely related to the ibisis and placed under the same family. They are tied to wetlands as their unique bill is adapted to feeding exclusively in water.

This bird is distributed widely throughout sub-Saharan Africa and prefers open grasslands and woodland savanna. It is naturally scarce in the arid zones but has expanded its range considerably in parts of Namibia and the Northern Cape due to man-made dams.

Spoonbills may be found singly or in flocks ranging from 3 – 30 individuals. This is often in response to feeding sites. Productive feeding sites will attract more birds and they are often in association with other waders such as flamingos, herons and storks.

Their feeding strategy is intricately linked to water. The bill is spoon-shaped and slightly decurved and broader at the base. It immerses this bill in the water and sways it from side to side in a semi-circular arc, immediately snapping up any prey items that come into contact. The Spoonbill feeds on small fish, amphibians, including tadpoles, as well as a variety of aquatic invertebrates including crustaceans. They will sometimes probe loose mud and sediment to flush out prey.

Nesting appears to take place throughout anytime of the year and the nest is constructed by the female. The nest is made from twigs, sticks, reeds and grass and is flat in appearance. The nest is usually placed above water as a platform and often in association with other breeding waders and waterfowl. Females lay 2-4 eggs and these take on average 26 days to incubate. The eggs are incubated by both sexes.

African Spoonbills can be seen at most bird sanctuaries and botanical gardens where water is present. In Gauteng Province, two good sites are Rietvlei Dam and the Maryvale Bird Sanctuary.

Spoonbills sway their bills from side to side in a semi-circular arc, immediately snapping up any prey items that come into contact.

Class: Aves
Order: Ciconiiformes
Family: Threskiornithidae
Species: Platalea alba
Etymology: Platalea = a Latin name meaning spoon-bill. alba = white, in reference to its all-white plumage.
UCN Conservation Status: Least Concern

Spoonbill are tied to wetlands as their unique bill is adapted to feeding exclusively in water.

PHOTOS & WRITTEN BY: Warren Schmidt

The Syke's Monkey Cercopithecus albogularis is also known as the blue monkey or samango monkey. The colloquial name is derived from Colonel William Henry Sykes who took the first specimens to England and described them in 1831. Samango is derived from the Zulu name iNsimango. This one was eating in the Afromontane forest near Pilgrim's Rest in Mpumalanga.

Strong Roots...

interview with Katja from Green Baskets

We interviewed *Katja Philips* from GREEN BASKETS Healthy Lifestyle Boutique based in Bedfordview, Gauteng, South Africa.

As a second generation immigrant from St Petersburg, Russia, Katja lends us an authentic, grass-roots understanding of fermented foods passed on from her great grandmother, highlighting their 'age-old' importance in forming a **strong foundatiton for our microbiome and gut health.**

Can you tell us more about your background? I was born in St Petersburg, Russia, in 1983. My family stayed in St Petersburg most of their life, but my grandparents on my father's side were from Siberia and they lived all their life enjoying the idea of total greenery and wildlife, and followed a true eco-orientated way of life. Two years ago, we visited Siberia and I suddenly understood exactly what kind of blood is running through my veins.

On the other side of my family, as much as they were also born in St. Petersburg, they really enjoyed spending time in the Ukraine. The Ukraine is well known for its extremely rich black mineral soils, known as *chernozem*. When it rains the soil actually turns black and smells amazing! It is so rich in minerals. We had small sets of farms. There was wine production, honey production. Here, we are not talking about factories but great big fields -great green openings with bees just flying around bringing you honey in the wild, from the wild. We also did cold-pressing of sunflower oil, all from our own sunflowers we would grow. That is my basic background.

I came to South Africa when I was only 15 years old, so I have been here for about 23 years by now. Pretty much most of my life I have lived in South Africa. Sadly, most of my allergies and health challenges began to appear in South Africa, especially to do with my stomach, accompanied by skin problems. I started to become aware of my allergies towards pork products -and later found out exactly why.

In St Petersburg I was brought up on our own beef, chicken and pork of course, where I never had a problem, but in South Africa I started developing quite nasty side effects from these foods. I guess that those became signs for me to dig deeper, I was quite young at the time, and it was about 10 years after having arrived in South Africa that I started feeling not as well.

What green business do you have, when did you start it, and why did you begin this business? My journey started almost 7 years ago, in 2014. I had my little daughter in my arms. She was just over a year old. She was definitely the little person giving me the possibility and the belief that I could do more in this world. First of all, the name that came immediately to me was 'Green Baskets'. I knew it would be something related to health, but not quite sure exactly what. Whether it was a juicing company or prepared meals or a health shop. And it landed up being a health shop -with the juicing aspect and with the prepared healthy meals service all incorporated.

I started this business due to my late stepfather, Zenwill Lacob, who had been diagnosed with pancreatic cancer, stage 4, five years prior to opening my business. He had been given practically 2-3 weeks to live. His oncologist told him to choose his dream destination -where he wanted to pass away, and to enjoy this time. Myself and my mother were not going to accept this and so we decided to overturn the world. Our first part of overturning it was looking at diet. Clean foods, non-genetically modified products. We learned a lot by just digging in. Not only on the internet of course, because I always believe that the internet is not a place to look for diagnostics …yet it does have some good information. I learned always to look who is sponsoring the link. At the time I was also living in London. I made good use of the libraries there and paged through books written many years ago, with a lot of wisdom and knowledge, not corrupted.. while my mom was already in South Africa doing her research on this side, I was doing the same over in England.

We both came to the conclusion that a lot stems down to being food related, and lifestyle related. The kind of sleep we are getting, the air that we are breathing, the stress we are going through, the water that we drink, the supplements that we take…

Of course we can't take control over everything all at once. But we took control of what was in our hands. This is pretty much where our journey of discovery started. And nevertheless, we managed to reverse the pancreatic cancer from stage four into complete remission.

What are some of your key food products that heal, support, and sustain gut health? My main aim is to provide truly clean health. Not "nature identical" but actually "created by nature". Gut health starts not only from a balanced diet and adding good probiotics into our system. I look at giving the possibility to the body of building healthy cells. Blood cells, the cells which create our organs, and the ones that speed up rejuvenation of our organs. In the beauty world we mainly worry about exfoliating our skin to look younger, but very rarely do we think of what really keeps us young. It's not just they spirit that we have, but also the body that spirit holds. And we need to treat and rejuvenate this body from the inside out. As we age, our rejuvenation process slows down, our metabolism slows down, therefore the aging process attacks us faster, or becomes more visible. It affects our hormone passages, our sleeping patterns, our energy levels and our appearance -our own reflection in the mirror.

So, I chose the road in choosing the foods in my shop which are 'clean'. Non-genetically modified -that is the first thing. Changing our DNA or RNA, in my view, growing genetically modified foods, should not be accepted by consumers.

As much as we are going through evolution, our DNA will be changed accordingly through nature's cycles. Also, by the way, thank you to the viruses. Because they are the ones helping us to change accordingly. But, I think when it is invasively done by human interference, by changing the structure of the DNA in supplying pretty much poisonous foods with genetically modified organisms, it is something that is definitely not in the same direction as nature intended.

So, our products are not genetically modified , they don't have pesticides, preservatives, artificial additives. We strive for things that have no cane sugars, or harmful, chemically created -sugar alternatives. That is our credo.

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How do fermented foods compare to a compost heap? If we make the comparison or see the similarity of the colon as a natural forest or ecosystem? I think this is very straight forward and very simple. Fermented food as we all know is filled with microorganisms and a whole lot of bacteria that are very friendly to our tummy. They help us to digest, to eliminate, they help us to combat the bacteria that is harmful and also parasites. They help our gut to stay clean. I think that is exactly how we can think about the idea of a compost heap, or any unwanted natural by-products that are left on the surface of the soil.

These little natural bacterias and microorganisms clean up by decomposing, by recycling, by re-using and turning all the items in the bio-friendly matter and basically by digesting it all they land up cleaning the surface of our planet. And I would say fermented foods and the little friendly bacterias and microorganisms inside us do the same thing, they help us to clean out and they help us rejuvenate.

Are these foods only important for our physical health and also for our emotional and mental well-being? I would say yes, absolutely. Mental health and physical health are definitely interlinked. I would never separate mental health, emotional health and physical health. They go in perfect balance together.

Do most people you meet generally rely on supplements like probiotic capsules for their "stomach to work properly"? I think it would be a very good scenario if most of my clients, say at least 50% of people I know would at least start taking probiotics. Never mind having them in natural food form. But at least in capsule form. The way it appears to me personally, it is still a very very "raw" kind of topic that people do not entirely understand the importance of it. I meet people mainly who suffer from heartburn and stomach pain, and indigestion, and burny feeling, and gastritis, and ulcers, and a whole lot of different things. Just a really disturbed microbiome inside the tummy. And the first thing that they reach out for are anti-acid tablets or a pain killer. Which is another ball game. This will eat your stomach lining even further. Making it more raw, more inflamed. So I am afraid people really rely on chemicals in our world. The world has come to a point where it is spinning too fast and rather people will go for something cheap, for something fast, and we think the relief of the pain means that the problem has been fixed.

And that is where the big misunderstanding comes in. It is only temporary relief, with long term side effects, most of the time. That is why homeopaths are one of the best people to go to address the problem, because they try to treat not the symptoms of discomfort. They actually try to dig deeper and to repair the body from the root of the problem.

People who are in a better scenario at least start looking at the idea of trying to avoid things that might cause them an allergic reaction, or that which is leading them to ulcers etc and most of their problems are in the stomach. They at least try to avoid gluten and conventional dairy, and some go even further and try to avoid your average commercially produced meat. Well, I guess it may in some cases prove to be enough -but not in many.

Then you get people who put more thought into taking care of their health by taking digestive enzymes. Last of all are the people who take probiotics in capsule form, or in liquid form. And a really small amount of people who actually are trying to have their probiotics in real food form. Which is your fermented foods and drinks.

So ya, as much as it all sounds very sad, this is unfortunately what I have noticed in the past six and a half years.

Our grandparents or great grandparents may be the last ones that still integrated fermented foods into their daily diet. Why are these 'digestion-promoting foods' so important for people to really be healthy in today's modern world? Would you say that people in our society, say upper middle aged and younger, generally have lost some level of connection with these type of traditional foods that have sustained human health for centuries, compared to previous generations? Well, this is quite a big question. The use of fermented foods were very much a norm in previous generations. It has changed because we have gone through modernisation in the form of things like fridges. Before, fermented food was something we could store over a period of time without requiring any freezing. Refrigeration wasn't entirely available. I think that previous generations just managed to live closer to nature or found ways to live with nature. Maybe that is also why more and more interesting recipes have been discovered, humans had to survive, and survive in their best capacity.

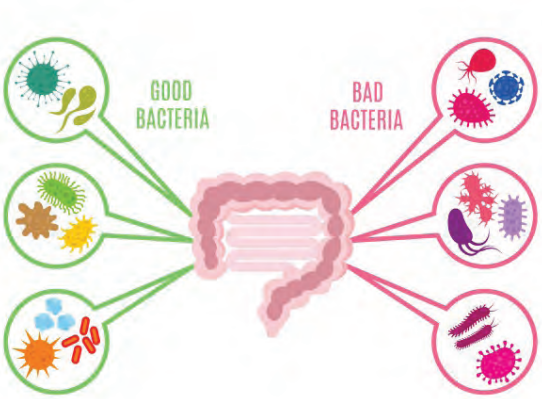
As the modern world has kicked in, I would say we have lost touch with nature or with our survival mechanisms and discovering new things just because we suddenly have become, I can't say lazy, but it simply became 'not needed'. It's not a necessity anymore. If we need something we simple go to the shop, or go online and just get it. Or we simply put things into the fridge, and if it has gone off, well big deal, we throw it away. Hopefully in a compost heap. And if not, we just throw it away and go and get a new item.

So, we really have forgotten that age-old 'knowing' of how to preserve food. Those discoveries which became our cherished knowledge stemming from previous generations, our grandparents and great grandparents.. they knew this and used to do things this way.
We have lost our health along the way.

I would say that it's now the younger generation who is trying to understand the bigger picture of gut health. This new generation is starting to discover, or re-discover I would say, the benefits of fermented foods and of those little 'people' in the form of these beneficial bacteria.

The main buzz words around these fermented foods are currently sauerkraut, kefir -which is our dairy product, and kombucha.
Yet, it's actually quite limited if you had to compare the amount of variety in fermented foods that we are still overlooking.

Coming from a country that has lots of snow and fresh produce being very limited in the winter months, and if it was available, when it was available, food was really cherished and preserved to its best capacity.



"Russians ferment anything and everything that you could actually possibly think about."

We ferment fruits (not just the notion of making jam, we actually ferment the fruit). We also ferment mushrooms, vegetables, we even ferment some meat, as much as it sounds really really crazy. It isn't the same as dried biltong. It's actually a very awkward taste, but nevertheless it exists. So, I would say that fermenting is something that we definitely need to do, looking at the idea of not just being limited to things like kombucha, kefir and sauerkraut.

We could actually have one whole separate shop offering just fermented foods. And it can last. There is no need for cooling fridges and the use of artificial preservatives in these foods. You have variety of colours on your plate, variety of tastes, variety of nutrition, and of course a sound biodiversity of beneficial bacteria here -optimizing and sustaining our gut health.

What can we gain from learning to make our own fermented foods beside the age-old health benefits? Making your own fermented foods can be an interesting experience, and can turn into a fun family activity in the kitchen for one weekend. It is again a connection with the past, a very wise past. For example, for myself, I keep a very old recipe from my great, great grand mother who used to ferment lots of things to survive through the winter and have 'x' amount of health inside us. I mean Russian winters are quite tough so we definitely needed to keep our immune systems up and there was definitely nothing fresh available. So, we have an old family recipe of how to make kefir. When I looked on Google and saw what recommendations there are for making your own kefir, I was very disappointed. How 'shallow' they are. But nevertheless, I guess if people just carry on experimentally working trial after trial, they will get themselves to the correct way of doing fermentation that would not only be the look of doing fermented foods but also have the benefits of fermented food.

What fermented foods do you sell at Green Baskets which are worth knowing about? We sell the kombuchas -but we watch out for the content of sugars; also definitely fermented foods without preservatives -because fermented food is already naturally self-preserved on its own. Also, our fermented foods do not contain additives like even vitamin C powder. This is totally unnecessary if it's a high quality fermented food product. Usually we use a good vinegar, non-irradiated herbs and spices or sundried unrefined salt, which is already nature's preservative. Kefir too of course! (Kefir is not suitable for vegans). These are the well-known products, very accessible, yet not too pricey either. At the end of the day, these can be made at home with rich health benefits.

INTERVIEWED BY : Nicolette Da Costa

Nicolette completed her tertiary education in social sciences, humanities and romance languages through the University of the Witwatersrand (WITS) and UNISA. Subsequently, her drive for making a difference lead her to the complementary health world where she is a registered Therapeutic Reflexologist & Meridian Therapist. Over the past 16 years, Nicolette has run her practice in Johannesburg providing treatments that offer strong support in bringing about stress relief, healing and recovery from illness, and a sense of greater vitality for people of all ages, from all walks of life. She has written several magazine articles and an e-book called *Earthing The Wired Generation -Stress Relief for Busy Kids*, available on Amazon.com. Nicolette believes that 'wellbeing', in all senses of the word, individually, societally, and globally, now and for the future, is inextricably tied in with nature. We can not fully care for ourselves & one another without looking after and being with the natural world.

Above the treeline...

a look at the iconic Giraffe

There is an iconic African mammal unlike any other. They blend in perfectly with the African savanna, randomly revealing themselves as they emerge from acacia thickets. They are the giraffes.

Giraffes are the tallest animals alive today. Males can reach an average height of between 4.9 – 5.2 metres (measured from the hoof to the top of the head upright) and 4.3 – 4.6 metres for females. Males weigh in at between 970 – 1 400 kg and females between 700 – 950 kg.

The bizarre anatomy of a giraffe has necessitated a range of unique physiological adaptations. The heart is extraordinarily large making up 2.3% of overall body mass compared to just 0.5% in most other mammals. Blood pressure is also higher than in other mammals and this is to facilitate blood flow through the long neck to the head against the forces of gravity. They have a sophisticated heat-exchange system including a large nasal surface area to assist with the cooling of blood. The patches on the giraffe's body also contain sweat glands to assist with cooling. Giraffes are unable to pant to cool themselves down.

Giraffes are distributed in acacia-savanna and generally avoid open grasslands, deserts and forests. In tropical forests they are replaced by a close relative, the okapi Okapia johnstoni, a bizarre animal that looks like a hybrid between an antelope and a giraffe. In arid regions they are always found in the vicinity of water and along watercourses that have adequate acacia trees. Their dietary composition is made up principally of acacia leaves but they will also eat the leaves, flowers and seed pods of other trees including *Combretum, Ziziphus and Terminalia*. Many of these trees are adorned with spikes and thorns which present little trouble to a browsing giraffe. Acacia (or now Senegalia and Vachellia species in Africa) tend to have a higher protein content than other tree species, especially in the rainy season. They shift dietary preferences as the seasons change.

Giraffe regularly search for salts and minerals in sand and soil and may chew and ingest soil minerals. They are also known to chew on bones and animal skins to supplement their mineral intake. Calcium and phosphate are important minerals.

Giraffe breed throughout the year and have a long gestation period of just over 15 months. The calf weighs around 100kg at birth and has a shoulder height of 1.5 metres. The average lifespan for wild giraffes appears to be between 20 and 30 years.

The horns of giraffe are called ossicones and are covered in coarse hair. In males these horns are more pronounced and some individuals will develop a third horn on the centre of the head. Males engage in combat by necking each other, or in other words, using their long necks as battering rams. The males have a dense bony skull which they batter each other with and can sometimes lead to serious injury on the opponent.

A giraffe can obtain a top speed of around 56km/hour and they gallop in an ungainly manner. Speed is not their virtue when running from predators, but adults can deliver a lethal kick or stamp with their powerful legs. Due to their large size few predators will attack giraffe. In previous studies, giraffe have made up less than 2% of lion kills. They can move over surprising distances with some giraffes travelling over 20km in one day.

How many species?

The giraffe was for a long time considered one wide-ranging species distributed in sub-Saharan, with the various patterns conforming to at least seven or nine different subspecies. However, a recent revised taxonomy using multi-locus genetic sampling has identified four clades corresponding to four unique species (Winter, Fennessy & Janke, 2018).

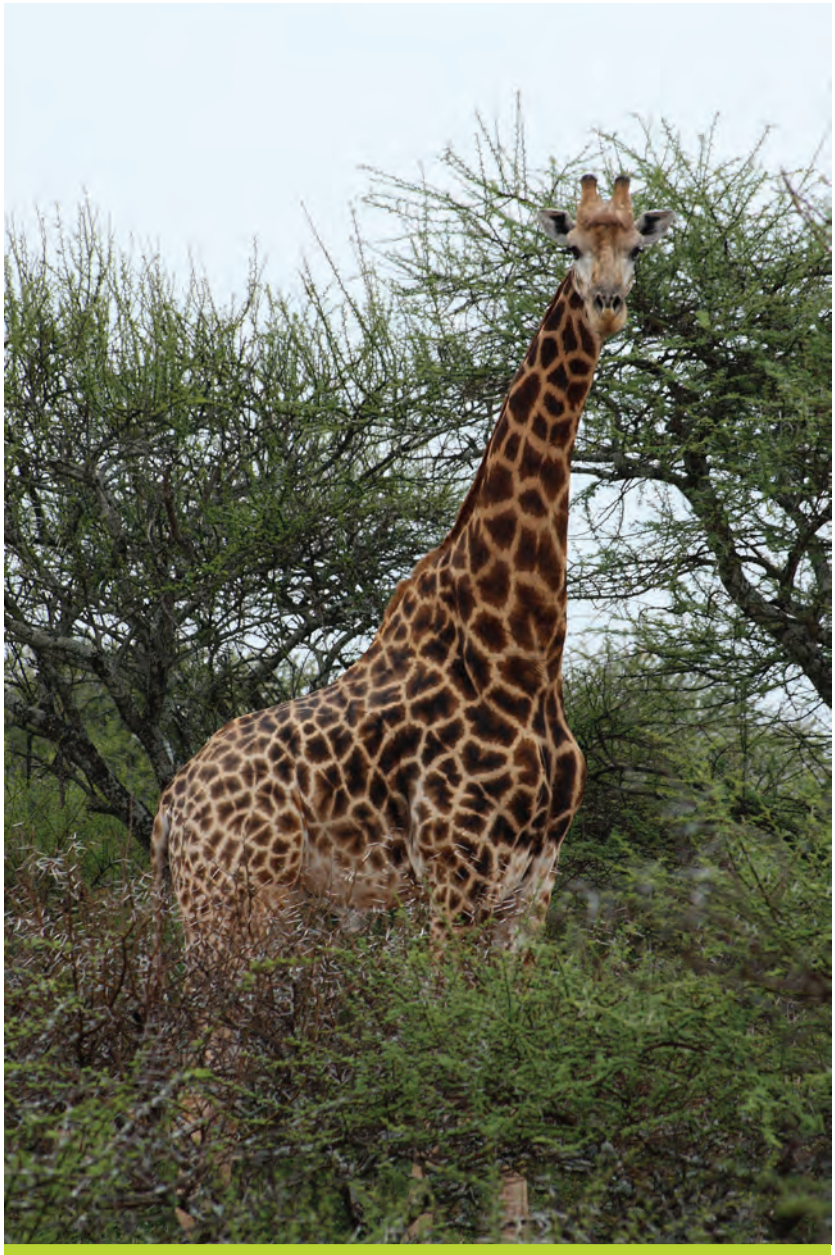
These are as follows:

- **Southern Giraffe** *(Giraffa giraffa)* – with two recognised subspecies: *giraffa giraffa* (South African Giraffe) and *giraffa angolensis* (Angolan Giraffe).
- **Northern Giraffe** (*Giraffa camelopardalis*) – with three subspecies: *camelopardalis camelopardalis* (Nubian Giraffe); *camelopardalis antiquorum* (Kordofan Giraffe); and *camelopardalis peralta* (West African Giraffe). Note: Rothschild's Giraffe is considered to be the same subspecies as the Nubian Giraffe.
- **Reticulated Giraffe** *(Giraffa reticulata)* – Kenya north into Somalia and Ethiopia.
- **Masai Giraffe** *(Giraffa tippelskirchi)* – throughout Tanzania and southern Kenya.

There is some consensus that Thornicroft's Giraffe from the Luangwa Valley in Zambia (which is genetically subsumed within the Masai Giraffe) should still be recognised as a distinct subspecies due to its isolation and for conservation efforts. This race would effectively be Giraffa tippelskirchi thornicrofti.

In terms of population numbers, there is estimated to be less than 600 West African Giraffe, around 5000 Northern Giraffe, 15 000 Reticulated Giraffe, 34 0000 Masai Giraffe (data from the Giraffe Conservation Foundation). Estimates of decline over three decades

Giraffes are important ecosystem engineers in the savanna biome.



Giraffes are distributed in acacia-savanna.

show a 95% decline in Northern Giraffe populations, 60% decline in Reticulated Giraffe and around 52% decline in the Masai Giraffe.

Conservation status

Giraffes are important ecosystem engineers in the savanna biome. They shape tree structure and density, stimulate new growth, distribute seeds, and have been shown to aid pollination in several tree species. Therefore, their role in ecosystems are important.

The conservation status of giraffes has received much attention of late, especially with the realisation that this animal is not one widely distributed species, as previously believed. In the past decade, numerous populations have declined drastically.

The Kordofan and Nubian Giraffe is listed as Critically Endangered, while the West African, Reticulated, and Masai giraffes are Endangered. It is only the Southern Giraffe that seems stable and largely protected in numerous national parks, nature and game reserves and private game farms, although there is some indication that these populations are also in decline.

The main drivers leading to population declines include poaching and loss of habitat. The Kordofan and Nubian Giraffes occur in areas of regular human conflict and therefore their protection is difficult to enforce. The Masai and Reticulated Giraffes are better protected, but have also experienced strong declines in recent decades.

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WRITTEN BY: Warren Schmidt

Warren Schmidt holds a Master of Science degree in Ecological Sciences awarded by the University of KwaZulu-Natal, South Africa. He has three decades of experience in ecology, conservation science, invasion biology and herpetology. He has worked as a journalist, magazine editor, and lecturer, and has presented numerous talks, seminars, and lectures.

An African Penguin Spheniscus demersus about to go foraging in the ocean. Photographed at The Boulders in the Western Cape. This is the most commonly seen penguin along the coast of southern Africa. They may hobble along on land but in the water are fast and efficient predators catching small fish which form their staple diet.

The Scarlet River Lily Hesperantha coccinea is a favourite garden flower in England and Europe as it is frost resistant. It grows naturally along river-courses and streams in eastern South Africa and eSwatini. It is a perennial herb which flowers from February to April.

ABOUT US.

Biodiversity & Environment Africa is a fully digital, website-based platform - freely available to readers globally. Publications and resources are available as downloadable PDFs, as well as regular online blog posts. It is our hope to make information available as far and wide as possible. In keeping with its environmental ethos, printing and distribution is effectively reduced, therefore striving towards a low carbon footprint and minimal use of natural resources.

The primary objective of B & E Africa is to interpret and disseminate often complex academic research and environmental policies in a digestible and easy to understand format. The website, www.biodiversitynature.com and blog articles therein, can easily be viewed in alternative languages by right clicking and using Google translate.

Never has environmental communications been as important and pertinent as it is in today's rapidly changing, dynamic world. It is critical that people receive reliable information about biodiversity, conservation, and environmental issues. Just as important, communities need to understand why biodiversity is important in their daily lives and why environmental issues are personally relevant to their health and wellbeing. Given the levels of poverty across Africa, the challenges may seem insurmountable, but can be overcome strategically with foresight, dedication and consistency.

Traditional knowledge and consumption of natural resources must be integrated into sustainable biodiversity management strategies and communities need to see, and experience first-hand, the benefits of biodiversity. The benefits of ecosystem services need to be demonstrated clearly and practically. Africa must also be cautious of international and corporate investments which lead to environmental destruction and biodiversity loss for short-term profit. Such short-term financial gain and profits cannot be allowed to overrun long-term sustainable goals and biodiversity conservation objectives. As humans, we yield immense power over the natural world, but we have a moral and ethical responsibility to leave a legacy of natural wonder to the generations that follow, so that they too can experience the majestic roar of lions, the trumpeting of elephants, and the humble dung beetle in the African savanna.

It may seem idealistic to aim for environmental sustainability and conservation of biodiversity when many regions of Africa are suffering from prolonged civil conflict, disease and poverty, but these challenges can be overcome. It will however take dedication and resolve from politicians, and more importantly, Africa's citizens. Thousands of game guards, wardens and environmental activists have lost their lives protecting biodiversity and natural assets across Africa. This alone goes to show that the will to protect is there. We owe it to these fallen heroes to ensure that their sacrifice will not be in vain.

Africa is custodian to some of the world's most unique landscapes, plants, and animals. Elephant, rhino, gorillas and a plethora of less enigmatic but no less interesting creatures call this continent home. Nurturing an appreciation and spiritual connection to these plants, animals and landscapes is critical to ensuring their long-term survival. It is the continent's youth that needs to be uplifted and guided to do this. Environmental education and resource management are essential skills that should be taught at every stage of a child's education, from pre-school to tertiary level. B & E Africa strives to be a communications channel bridging the gap between academic research findings and translating scientific literature into a format that anyone can appreciate and understand.

B & E Africa will cover a range of topics and carry out interviews with scientists, researchers, businesses, and politicians across the African continent and further afield. Some of the topics covered include:

- Biodiversity (focus on diversity and conservation of plants and animals)
- Biosecurity (the prevention of pathogens and invasive species)
- Climate change (global climate change)
- Community upliftment (environmental benefits to communities, tourism, bioprospecting)
- Conservation (endangered species, trade, poaching and conservation issues)
- Economy (financial economics and the environment)
- Ecotourism (safari and game lodges, ecotherapy, tourism, birding and hunting)
- Environmental management (landscaping, environmental scoping and impact assessments)
- Invasive species (spotlight on invasive animals and plants)
- Legislation (environmental law and legislation)
- Marine resources (fisheries and recreation)
- Recycling (waste management)
- Resource management (agriculture, forestry and mining)
- Sustainability (development and resource management)
- Technology (GIS, satellites and other technology used in environmental management)
- Water (water resource management & wetlands)

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