Celtis africana

Sterkfontein Country Estates November 2013

This month it's going to be mainly about rock formations on our Estate. This is very interesting and for those who are into geology, this is going to be very interesting reading! I've wanted to include this very unique feature of our Estate for a while now. I have asked Garfield Krige (SCE129) who is very knowledgeable and has a keen interest in all things scientific (due to the nature of his occupation) to write it for me. I don't think I could have written it in a better way and I am sure even those of us not into this kind of thing, will both understand as well as appreciate this interesting phenomenon. Enjoy reading (and learning as I did!) about stromatolites.

On the subject of all kinds of creatures living on the Estate, have a look at this one! The first hot, sunny day we were busy in the garden and I had the sprayer on in an area where I had just planted a few things. As I went to close the tap, my one leg froze mid-air as I almost step on this dude! He seemed to be in a big hurry as he paid no attention this" statue" of a human being!

He was either irritated by the water from the sprayer, or, (like most men!) he had ONE thing on his mind, you know - that THANG called l-o-v-e! Lucky for me! Okay guys, it could have been a "she" hurrying to a sale at the nearest mall! As it moved on, I howled, "snake!" at the top of my lungs and my brave other half, never mind his poor wife almost dying of fright, had to get his camera to take pics of this monster! Well, this mister was very close to two meters long! Our poor gardener was very puzzled that we could let such a monster go off into the veld instead of killing it on the spot!

Some facts about the Rinkhals (*Hemachatus haemachatus*):

1. Not a true cobra, as it gives birth to live offspring instead of laying eggs and there are also skeleton differences to those of the cobra. It gives birth in late summer to between 20-30 offspring – cases of up to 65 have been reported!
2. Dorsal scales are keeled and it is a dark grey, olive-brown to dark brown, or black coloured with distinctive and characteristic 1, 2 or sometimes 3 white bands under its throat, which is visible when in an upright hooded position. The Rinkhals climbs easily and will sail into hedges or up trees when trying to escape.
3. Can only spit from upright position and can spit 2-3 metres.
4. Loves lie baking in the sun and when threatened by human appearance, it can pretend to be dead, lying in half upside-down position with it s tongue hanging out of an open mouth. When picked up it can hang in a limp position, but can suddenly bite – be careful, the 'dead' Rinkhals may not be dead after all!
5. Loves guttural toads but also feeds on lizards, small snakes, rodents, birds and their eggs (eggs are swallowed whole).

6. Rinkhals' are often confused with mole snakes and/or Mozambique spitting cobra or even the snouted cobra – get a proper snake guide guys and get properly acquainted!

Source: 'n Volledige gids tot die slange van Suider Afrika – Marais, Johan

A visitor to our plot! The photo does not really do justice to its real size!!! (*Photo: Garfield Krige SCE129*)

With spring and some warmer days, we saw the arrival of lots of little animals and birds, and Garfield Krige took this photo of a newborn crowned plover – as you can see the little thing is still wet! The parents did not like this cameraman so close to their baby and complained in shrill voices, flying into the air and diving down, trying their best to frighten him off!

(*Photo: Garfield Krige SCE129*)

On the subject of plovers - (or lapwings as they are also called) we noticed a funny new birdcall on our property a couple of weeks ago. On closer inspection and after taking some photos, we are happy to say the new residents are African Wattled Lapwings (*Vanellus senegallus*)! These lovely birds (they are the largest in the lapwing family) prefer vlei areas or near rivers, fountains, or short grass in wetland areas. Look at its beautiful colours – from the striped neck and yellow legs to the yellow facial wattles with a red base. I have noticed that since we have added more and more drinking areas and water sources in our garden, we seem to attract a lot more (and different) bird species than other years. Because we keep certain areas quite wet, this may also have attracted these birds. They do wander off to neighbour's plots during the daytime looking for more food and at night their shrill calls on our lawns make us very aware of their presence!

An African Wattled Lapwing (*Vanellus senegallus*) (*photo Garfield Krige SCE 129*)

Source: Roberts Bird Guide – Chittenden, Hugh

On the lighter side: What's the difference between a porcupine and a Porsche? The porcupine has the pricks on the outside!

Ietsie snaaks: Hoe bewys 'n man hy beplan vir die toekoms? Hy koop twee kaste bier in plaas van een!

Hierdie maand gaan dit oor rotsformasies op ons Estate en ek dink die van julle wat geologie interessant vind, gaan regtig geniet waaroor dit gaan. Ek dreig al 'n ruk om oor hierdie unieke fenomeen van ons area te skryf . Ek het Garfield Krige (SCE129) wat 'n breë algemene kennis het, en as gevolg van die wetenskaplike aard van sy beroep, gevra om dit vir my te skryf. Ek dink nie ek sou dit so maklik lees- en/of verstaanbaar kon skryf soos hy nie. Ek dink selfs al is daar van julle wat nou nie regtig 'n belangstelling in geologie

het nie, julle dit tog sal interessant vind dat hierdie interessante formasies hier voorkom. So lees gerus (en leer sommer meer, soos ek!) die stuk oor stromatoliete. Ek gaan dit regtig nie vertaal nie, want ek weet ons Afrikaanssprekendes is slim genoeg om die Engels te verstaan! Dis buitendien so geskryf dat selfs ‘n leek soos ek dit kon verstaan – so geniet!

Nou-ja, hier op ons Estate kom mos allerhande diere en gediertes voor – nie dat ek gek is oor almal nie, so kyk bietjie na die knewel hier bo!. Een sonnige lente-oggend is ek in die tuin besig en die sproeier was aan op nuwe plantjies. Ek was net op pad om die kraan te gaan toedraai, toe my been halfpad in die lug vries – so AMPER trap ek op die meneer! Gelukkig vir my was hy haastig op pad êrens heen en het geen aandag aan hierdie menslike “standbeeld” gegee nie! Dankie tog!

Of die water van die sproeier het hom geïrriteer, of hy het net een ding (soos meeste mans!) op sy brein gehad – kom ons noem dit maar lentekoors! Nou goed dan, manne, dit kon ook ‘n “sy” wees haastig op pad na ‘n uitverkoping by die naaste winkelsentrum! Ek gil net “slang!” en my dapper man gewapen met sy kamera, hardloop nader om foto’s te neem! Of sy ander helfte nou ‘n naby-beroerte het, gaan hom nie aan nie! Die tater was by die twee meter lank! Ons arme tuinjong kon net glad nie verstaan dat ons die monster sy gang laat gaan die veld in, in plaas van hom op die plek bokveld toe te stuur nie!

‘n Paar feite oor die rinkhals *(Hemachatus haemachatus*):

1. Alhoewel hulle na verwant is is hulle nie egte kobras nie – rinkhalse gee geboorte aan lewendige kleintjies en kobras lê eiers. Daar is ook skeletverskille tussen die rinkhals en kobras. Gee geboorte laatsomer aan 20-30 kleintjies en gevalle van tot 65 op een slag is al aangemeld!
2. Dit het gekielde rugskubbe en is olyfkleurig tot donkergrys, donkerbruin of dofswart en het die kenmerkende wit dwarsstrepe onder die nek (1-2, soms 3) wanneer dit die kop bak maak. Rinkhalse klim goed en sal gemaklik in heinings en selfs bome opseil wanneer dit probeer ontsnap.
3. Kan net spoeg as voorlyf in regop posisie is en kan 2-3 meter ver spoeg.
4. Lê graag in die son en bak en sal, wanneer mense te naby kom, maak of dit dood is. Dit sal selfs met die voorste deel van liggaam onderstebo lê met ‘n tong wat by sy oop bek uithang. As dit opgetel word sal dit slap hang, maar kan onverwags pik! So moenie dink ‘n “dooie” rinkhals is noodwendig dood nie!
5. Rinkhalse is mal oor skurwe paddas, maar vreet oor akkedisse, knaagdiere, slange, voëls en hul eiers – die eiers word heel ingesluk.
6. Rinkhalse word gereeld verwar met Mosambiekse spoegkobras, wipsnoetkobra of molslange – kry gerus ‘n slanggids en leer meer van die gediertes!

Bron: ‘n Volledige gids tot die slange van Suider Afrika – Marais, Johan

Met die koms van lente het ons ook oral nuwe aankomelinge op die Estate verwelkom! Die foto hierbo is van ‘n pasgebore kroonkiewiet – die ou dingetjie was nog nat toe Garfield Krige die foto geneem het. Nodeloos om te sê sy ouers was glad nie ingenome met die kameraman so naby hul baba en het hul misnoeë luid te kenne gegee. Hulle het die lug ingevlieg en met groot lawaai afgeduik op hom om hom te probeer verwilder.

Van kiewiete gepraat – so paar weke gelede het ons bewus geraak van ‘n nuwe voëlklank op ons plot. By nadere ondersoek en na ‘n paar foto’s geneem is, het ons in ons Roberts Voëlgids gesien dis lelkiewiete (*Vanellus senegallus*) en ons is nie bietjie in ons noppies met die nuwe intrekkers nie! Ons dink maar dis omdat ons heelwat meer waterpunte en drinkplekke oral in ons tuin het en sekere areas ook klam bly, wat ons meer en verskillende voëlsoorte na ons tuin lok. Hul habitat is volgens ons gids meer naby vleilande, riviere, vloedvlaktes en in die kort klam gras aan die rand van strome. Hierdie is die grootste in die kiewiet familie. Kyk na die geel bene, gestreepte nek en geel lelle met ‘n rooi basis. Regtig ‘n mooi voël. Bedags besoek hulle buurplotte vir kos, maar snags maak hul met hul skril stemme hul teenwoordigheid op ons grasperke goed bekend!

Bron: Roberts Voëlgids – Chittenden, Hugh

The Name, Malmani Rd, dolomite and stromatolites

Has anyone, especially the newer residents, wondered where our road got its name? After all, Malmani Rd is a rather unusual name for a road.

The name actually refers to the geological formation on which we live.

I am sure most of us realise that we live on a type of rock called *dolomite*. If not, you must take cognisance of the fact that this type of rock is prone to the formation of caves and sometimes sinkholes. Water management near your residence is of the utmost importance, as leaking pipes and septic tank/French drains could lead to the formation of sinkholes. It’s for this reason that the Mogale City Municipality has banned all septic tanks at Sterkfontein Country Estates and that you must have permission from the Council for Geosciences before you can build a house. These rules are for your own safety. But enough of this, that’s not what I want to talk about.

The sedimentary rocks in our region are as follows from oldest to youngest. Deep below us and to the south of us in Krugersdorp and Randfontein are the rocks of the Witwatersrand Supergroup. It’s in these rocks (mostly quartzite and shale) where gold is found. Above these rocks are the rocks of the Transvaal Supergroup. These rocks were formed in an ancient and relatively shallow sea that covered our area between roughly 2.6 and 2.2 Billion years ago (that’s 2 600 Million and 2 200 Million years ago! That’s an incomprehensible long time ago!!!).

These rocks were formed on an earth that was quite alien when compared with the earth today. For starters, there was no free oxygen in the

atmosphere, so there was no place for animals that breathe oxygen. For that matter, there were no plants around either. The only life forms that were around during those times were primitive bacteria.

The first “layer” of rock of the Transvaal Supergroup that was formed immediately above the Witwatersrand rocks is called the Black Reef. This “layer” was formed when rainwater and rivers washed pebbles, formed by the erosion of the Witwatersrand ridges to the south of us. The mud, sand, grit and pebbles eroded off these mountains filled ancient riverbeds and canyons, so, although the Black Reef on average is usually less than 10-m deep, in certain areas to the south of us, these in-filled ancient river beds and canyons formed deep “layers” of black reef of over 100-m deep in places. Of course, as there was gold in the Witwatersrand rocks, this gold was also selectively deposited among the pebbles of the Black Reef. If you are a SCE resident living on the southern side of our estate and you have a view of the Krugersdorp Game Reserve, take a look through a pair of binoculars to that piece of the Witwatersrand ridge. Just to the west (to the right) of the Percy Stewart Sewage Plant and into the game reserve, you’ll see many reddish coloured excavations. Those discolorations are all old mines that were mined into the Black Reef over 100 years ago.

Historic Mining excavations of Black Reef to the south of our Estate

After the Black Reef was formed, something very special occurred in this ancient sea (the Malmani Sea). A certain type of bacteria with the ability to photosynthesise established themselves in this sea and, as you may recall from your school biology, during photosynthesis, carbon dioxide is used up, together with the energy from the sun, and as a by-product, oxygen is released. This group of bacteria are collectively called the blue-green bacteria or the *cyanobacteria*. Some types of these bacteria formed colonies, which resembled today’s coral reefs (except, of course today’s coral reefs are relatively colourful and formed by animals, while these “reefs” of cyanobacteria were sort of a dark bluish-green colour). These cyanobacterial

colonies had sticky/slimy layers around the outside of the colony and sand and mud in the water (washed off the mountains down the rivers into this ancient sea during the rainy season) stuck to this sticky layer. Every rainy season, sediment would stick to the colony, while during the dry season when there was less mud in this sea; the bacteria would grow through this layer in order to re-expose their chlorophyll to the rays of the sun. This occurred every season and every year a new layer of mud and sand accumulated on the colony, slowly increasing it in size. As this sea filled up with sediment, these colonies eventually turned to stone (fossilised) and, as there was sufficient mud on the slimy layers of these bacterial colonies, their remains are still visible today. These fossils are called “stromatolites”, from the Greek “*stroma*”, meaning mattress, bed or stratum and “*lithos*”, meaning rock.

Examples of stromatolites on our Estate (*Photo: Garfield Krige SCE129*)

However, these bacterial “coral reefs” are not famous for their ability to turn into fossils called stromatolites, they are ***more*** famous for altering the chemistry of the sea in which they lived. By doing so, they eventually turned the atmosphere of the earth into an oxygen-rich atmosphere, paving the way for us animals (yes, we are animals!) to evolve!

By removing the carbon dioxide from the seawater (for them to photosynthesise), they gradually decreased the acidity of the water (made the water more alkaline). This had the effect of causing some of the substances that were dissolved in this seawater to begin to precipitate out of solution, as they could no longer remain in solution in an alkaline solution. Two of the elements that were plentiful in water in those days, were calcium and magnesium. Massive amounts of these elements were dissolved in the water, but as the cyanobacteria gradually made the seawater more alkaline, these elements could no longer stay in solution and started to precipitate out of solution in the form calcium-magnesium carbonate, or *dolomite*. In our area, the dolomite would eventually form a layer several kilometres thick.

During some rainy seasons, more mud/sand/grit would be washed into this sea. This sediment would settle on the bottom of the sea as muddy layers. Then more dolomite would precipitate on top of these layers. Eventually, due to the weight of all the sediment on top of these layers, everything turned to stone. The sediment layers in the dolomite are called *chert* and can clearly be distinguished from the whitish-grey dolomite.

Chert bands (the darker rock) embedded in the light grey dolomite (*Photo: Garfield Krige SCE129*)

From our perspective (as oxygen-breathing animals) the most important thing these cyanobacteria did, was to release free oxygen into the earth’s atmosphere. Previously, all the oxygen was in combination with another element or element group. Calcium carbonate (or limestone) is such an example. Although it contains oxygen, we can’t breathe limestone!

For millions of years oxygen released by the cyanobacteria did not get very far. It was merely “used up” by combining with other elements in the water. But after very many millions of years, the earth eventually began to have free oxygen in its atmosphere, paving the way for the development of higher animals and plants.

Beautiful and decorative banded ironstone pebbles, sold in nurseries. This clearly shows the dark bands of iron oxide that were formed in these sedimentary rocks when free oxygen became available in the atmosphere (*Photo: Garfield Krige SCE129*)

At one stage, the earth became a dryer place and the Malmani Sea began drying up occasionally. This stopped the formation of dolomite. However, the deposition of the sand/mud/grit in this sea continued and these sediments eventually turned into about 7 Km of stone (in our area), mostly shale and quartzite. The Magaliesberg to our north is roughly the top part of the Transvaal Supergroup.

To make things easier, geologists divided the Transvaal Supergroup into groups. The upper layer of quartzite and shale (Magaliesberg, Daspoort range and the other ridges to the north of us) is called the *Pretoria Group*, while everything else below it (down to and including the Black Reef) is referred to as the *Chuniespoort Group*. The dolomite in this Chuniespoort Group is referred to as the *Malmani Sub-Group*, and that is where our road got its name... It’s named after the Malmani Sub-Group, which refers to the dolomite on which we all live!

Note: At the HOA AGM of 23/05/2009, residents were asked to propose names for our road and Garfield Krige (SCE 129) suggested the theme of our local geology. He explained that the suggested names come from the unique geological features of our area. The majority votes went for Malmani Road as a name for our main road, as we did not want yet another Cave Road or another Sterkfontein road etc - Elizabeth.

Funstuff!

Peter Botha (SCE 153) says he decorated his Christmas tree early this year!