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Are our local youth softies?

I recently had the opportunity to work with a group of volunteers from Canada and the USA. Over a period of six days we walked in some very rocky, mountainous country and chalked up over 40 hours on foot with more than 80 km covered.

These young people were here on a holiday - not trying to become field guides. Their careers did not depend on them being found

“competent” and they were not obliged to attend a single outing if they didn’t feel so inclined. Despite this, every day they walked up rocky mountain sides with me, crashed through thickets of paraffin weed (a story for later telling) picked paths through tamboti thickets and all without a complaint or a moan. On one guides training course I helped facilitate a while back, I heard more moaning from young South Africans in one three hour walk than I did from this group in a week.

This made me wonder why many of our local youth are

even trying to get into the guiding industry. Many I have trained have had no prior interest in the bush. They have not gone hiking, birding, hunting, fishing or even visiting our national parks before. They arrive for a training course overweight, out of shape and with an attitude of “what can you do for me” on their minds.

At times like this I feel that we training providers are a major part of the problem facing the guiding industry today. We are simply allowing the wrong people to get in in the first place. Taking a critical view of the candidates being turned out on training courses across the country I think that we have failed the industry. (*Remember that I assess many of them later on in their careers, so I see examples of the quality turned out by all providers in SA.*) The assessment criteria are too easy to pass and in the selection process there is little or no consideration of the person’s moral and ethical

fibre or their commitment to the environment and to the industry. The result is that we end up with dead-loss guides that take up space and then drop out after a few years leaving the process to go round again.



To those young people out there (and there are many of you) who have what it takes, who are committed, who do care about our environment and who want to go the distance - I apologise for the above negative assessment. You are the ones we want. The fact that you are reading this tells me that. Thank you for your contribution to this wonderful country!

Antarctic krill as an indicator of climate change

Possibly the biggest source of protein on earth is the Antarctic krill (*Euphausia superba*) a small crustacean weighing in at less than a gram yet living in enormous swarms amounting to over 500 million tons of protein packed into the southern ocean. This massive food source has not gone unnoticed and it forms the basis of a huge food web involving many fish species, penguins and baleen whales who all prey on them. The system is one of stunning simplicity. Microscopic phytoplankton feed tiny krill which in turn feed 50 ton whales! It

represents the most efficient conversion of sunlight into protein anywhere on earth. The density of krill is astonishing - about 30000 of them are found per cubic meter of swarm in which they live. With those sorts of odds, it is no wonder that they form the backbone of the antarctic ecosystems.

When a resource like this starts to disappear, then it is time to sit up and take notice - because that is exactly what is happening. Since the 1970’s the mass of krill

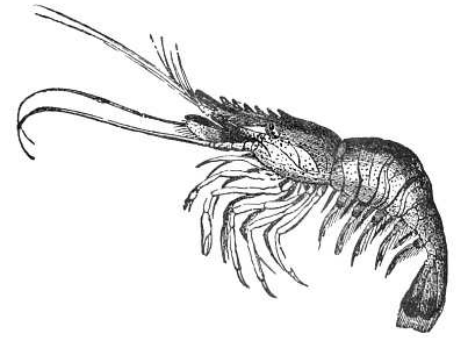
has declined around 80 per cent and there is much evidence that at least part of the blame lies at the feet of our warming climate. So how does climate change link with declining krill?

Warmer seas mean less sea ice which causes major problems for the krill. Extensive sea ice cover allows krill to evade large predators during the winter months and at the same time provides their major food source during that season - ice algae. As the sea ice starts to melt during the summer months it releases the nutrients and algae that the phytoplankton require to bloom. Any reduction in this bloom reduces the reproductive success of krill.

Today the Antarctic Peninsula is the most rapidly

warming region in the southern hemisphere. Over the last half-century, it has warmed by 2.8°C causing a startling decrease in winter sea ice - both in size and duration.

In this time, 25,000 square kilometres of ice have been lost from ten floating ice shelves. This corresponds predictably with the 80% reduction in krill abundance in the last 30 years.



Much fuss about a long-tail Cassia

I recently spent two weeks training in the Klaserie Private Nature Reserve where I was fortunate to stay in a lovely cottage with an equally lovely view of the bush down towards the Klaserie river. In front of my varanda stood a big long-tail Cassia tree (*Cassia abbreviata*) which seemed not the least bit upset that its name had been changed from sjambok pod! The tree was festooned in the long pods for which it is named.

Every day during my stay there, there was a flurry of bird activity around the tree and I wondered what they may be after. I have opened up old cassia pods in the past and have found a large array of insect life in them. Was this what they were after? I immediately assumed that it was when I watched a large flock of green woodhoopoes clambering around on the pods and probing their beaks into the cracks. After all, woodhoopoes are insectivorous. On one occasion, I saw a hoopoe pry something bright green from the pod and begin to give an excited call, attracting a young bird that immediately received the treat. I was able to take some unremarkable photos using a small point and shoot camera I keep for photographing plants, insects and the like.

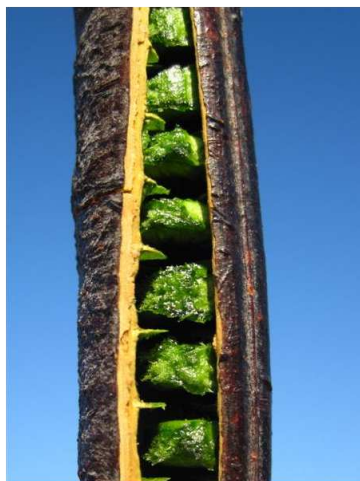


Photo: M. Douglas

Upon closer inspection, I found that it was not insects they were after, but the seeds themselves which are covered by an almost luminous green

mucilage. In all, I witnessed the hoopoes, crested barbet, dark capped bulbul, glossy starlings, grey hornbill and yellow billed hornbill feeding on the seeds and the fruity slime.

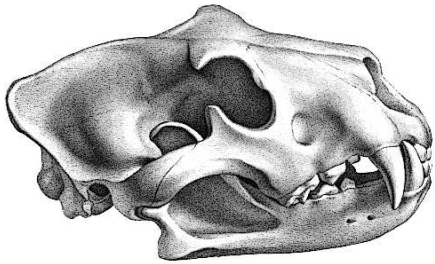


Photo: M. Douglas

The grey hornbill was particularly good at it, having learned a technique to open the pods. It would grip onto the pod and insert its beak and twist. It would then release its grip and fall off the pod, using its body weight to help rip the pod open a little further. The starlings were very possessive about the tree and would go into a frenzy trying to chase away any other bird that came near it.

African lions may be two distinct species?

When I recently read an article about this I must confess that I immediately started to feel uncomfortable about it. I have no way of checking the science involved here, but I find it very strange (and suspect) that so many animals from that region are now being divided into further species. To me it smacks of an attempt to raise additional awareness (and funds) for species that appear to be rapidly falling towards regional extinction.



The story goes like this. Previous research and comparisons pointed out that west African lions

seemed to be smaller, have smaller manes, have different shaped skulls, live in smaller groups and eat smaller prey than their south and east African counterparts. This prompted geneticists to compare lion DNA to see if the outward differences were backed up

by genetic evidence. When they examined a specific part of the mitochondrial DNA, they discovered that lions in west and central Africa have more in common with Asiatic lions than they do with lions from south and east Africa!

This brings up an obvious question. Why are the western Africa lions the ones to be similar to the Asiatic form and not those from the east? How did they skip across the continent, bypassing the east African lion? One (unsatisfactory) explanation given is that the great rift valley and the west African rain forest formed natural barriers to dispersal of the east African lion. At the same time, it is hypothesised that a regional lion extinction occurred during periods of severe drought 18000 - 40000 years ago. Following a return to conditions suitable for lion survival, west Africa was again colonised by lions from the Indian sub-continent while east Africa was later colonised by lions from the Middle East. I don't know about you, but I find this very hard to swallow. I will be keeping my eye on developments on this story.

Boom and bust as signals of ecosystem collapse

Predicting the collapse of an ecosystem is not easy because there are so many relationships and so many complexities within natural systems that it becomes a near impossible mathematical nightmare! For this reason, scientists are constantly on the lookout for an easier method to predict impending system failures. One such example has just been proposed and is based on the phenomenon of "boom and bust" in which the numbers of certain species have a tendency to suddenly skyrocket and then collapse.

Lake Peter and Lake Paul (no jokes) in Wisconsin USA were used as experiment and control in order to see what happens if systems are altered. Lake Peter had no large predatory fish in it and so the scientists introduced large mouth bass into it to see what happened. Lake Paul had always had these fish, so it could be used to compare results. Lake Peter's basic food web was that phytoplankton were eaten by water fleas which in turn were eaten by small fishes called

golden shiners. The introduced large mouth bass were there to eat the golden shiners.

Within three years of introducing the bass the system had changed dramatically. The golden shiners had cottoned on to the predatory intentions of the bass and they began to become more secretive, hiding away in the shallows. This meant that they did not breed as well and they ate fewer of the water fleas. The water fleas boomed to such an extent that the phytoplankton started to die out.

The monitoring and measuring of these changes is expensive and time consuming, but the researchers believe that the wild swings in populations are a certain indicator of system changes to come and should be used in a wider range of environments to try predict the impending loss of stability or diversity within natural systems. The research was published in the journal **Science**.

Arctic reindeer "see in UV"

A study published recently in the Journal of Experimental Biology shows that reindeer are able to see and respond to stimuli in the ultraviolet wave spectrum. Light in this wavelength is wasted on us, but

is used by most animals to help them survive in their environments. According to the research team, they believe that this ability helps the reindeer to locate food and predators in the "UV-rich" Arctic atmosphere, and

to retain vision in the low light conditions of the arctic winter. Ultraviolet (UV) light has a shorter wavelength than "visible" light and is more energised.

According to Professor Lars Chittka of Queen Mary University London, UV vision might enable reindeer to "see" wolves and the lichens that they eat more easily. Lichens absorb UV light and would therefore appear darker than the surroundings. Wolf fur also absorbs UV light and so they too would stand out darker than the surrounding snowy environment.

Tests done on reindeer retinas and eye lenses showed

that they allowed only certain less damaging lower frequencies of UV light (UV-A) to enter the eyeball. The higher and more damaging frequencies (UV-B) were blocked, thereby preventing damage to the eye. Human beings often suffer snow blindness in these whited out conditions owing to our inability to exclude highly energised light in these wavelengths. Although they did not test the eyes of wolves, polar bears and arctic foxes, the fact that they don't suffer from snow blindness means that they almost certainly have the same UV abilities as the reindeer do.

What is it?

What are these small (approx 6mm) red creatures which can often be found walking around when the sun comes out after a rain shower?

"Weakness of attitude becomes weakness of character."

Albert Einstein



Photo - M Douglas

Deepest-living land animal found in South Africa

Scientists from Princeton university have discovered that Beatrix and Driefontein gold mines are host to the deepest dwelling land animals on earth. By filtering borehole water used in the mines, they were able to collect the organisms (mostly bacteria) found in the ancient groundwater used in the mines. This water came from ancient rainwater that filtered down into cracks in the earth and took anywhere between 3000 and 10000 years old to get down to the 1,3 km depth from which it is now obtained.

Having found only bacteria for most of the research period, one of them was surprised one day to discover a bunch of tiny worms in the water filters. The scientists initially questioned where the worms came from,

believing that they were probably brought into the mines on workers boots. However, the fact that they are adapted to live in water that is very hot (48°C) and has almost no dissolved oxygen in it shows that they have evolved and adapted to the environment over many years. They now believe that they have not just recently been washed into these cracks, but have been living there for millennia already.

One of the species of worms (a roundworm) was new to science and was named *Halicephalobus mephisto* for Faust's Lord of the Underworld. The other is a previously known roundworm known as *Plecticus aquatilis*. The scientists believe that more species await discovery in these inhospitable depths.

Rainforests killed for tofu

Brazil's rainforests are disappearing at an increasingly rapid rate - mostly to make way for soya bean plantations. According to the National Institute for Space Studies (INPE) in the Mato Grosso area, 405.6 square kilometres of forest were destroyed in April this

year alone. This was more than in the whole of the previous year.

Profitability from soya beans is spiralling upwards and the ruralistas (local farmers) are climbing on the bandwagon. This comes at the same time that some of

the historical laws relating to forest destruction are being relaxed and an amnesty is being proposed that will indemnify anyone who illegally destroyed forests

before 2008. Farmers are now keen to clear as much forest as they can and claim impunity under that amnesty.

Doubts cast on moon formation theory

Our current best state of knowledge has it that a Venus sized object once struck Earth a glancing blow, completely re-melting our planet and kicking up a massive cloud of gas and other debris that eventually accreted to form the moon. This was a good theory since it stood up to most of the scrutiny scientists were able to subject it to. Until now.

Recent discoveries have been made that show the moon to have more water on it than was ever imagined possible, prompting scientists to ask "*how did water get to be on the moon in the first place*". If the moon was made from a violent collision, then water would have been vaporised and would never have managed to form part of the satellite in the first place. The idea was therefore proposed that the water arrived from space held in comets and other icy debris. The problem was seemingly (and conveniently) solved. Unfortunately, new and better



research has shown that this is very unlikely.

Materials brought back from the moon by Apollo 17 include evidence of volcanic activity similar to that seen on earth. In the "orange soil" they brought back were olivine crystals that formed during these lunar volcanic events and in these crystals were embedded beads of volcanic glass containing evidence of trapped water that could not be boiled off during volcanism. On analysis, these geological "time capsules" were found to contain more than 100 times as much water as previously thought possible. This means that the moon had at least as much ground water per area as does the Earth today.

Erik Hauri, a geochemist from the Carnegie Institution and lead author of the new research believes that the collision theory is still fundamentally right, but there is a major component missing that we still don't understand.

What is it - Answer

The red creature shown in the picture is a velvet mite probably of the Genus *Dinothrombium* or *Trombidium*. The one pictured is an adult, which spends its life as a free living predator, feeding on small arthropods, other mites etc. The nymphs however spend their lives as parasites on insects and may often be seen on the second (inner) pair of wings of locusts sucking the host's blood.

The red colour warns that they are poisonous which is indeed the case, although nothing specific is known about the type of poison, how it is derived and where it is stored. Some Indian species are used to induce paralysis and others are said to increase libido and are referred to as "Indian viagra."

Why do some owls have ear tufts?

Of the 225 or so living owl species, 50 have what are called ear tufts. I have often wondered why this was and have never found a conclusive explanation. There are some theories however, and I will look at these in this article.

One hypothesis (Myserud & Dunker 1979) states that the ear tufts allow the owl to look more like a mammal

and to therefore appear more scary to potential mammalian predators. As nice as this sounds, the absence or presence of ears is far less important in a threat display than are gaping beaks and glaring eyes. Also, not all eared owls are found in places where mammalian predators pose a serious threat to their existence.

Another idea put forward by Sparks & Soper (1970) and Burton (1973) is that the ear tufts aid species recognition by creating a recognisable silhouette. Again this seems unlikely in that owls rely mainly on vocal recognition for the simple fact that most are nocturnal and that visibility at a distance at night is limited.

The best hypothesis argues for camouflage. The erected ear tufts and the stretched roosting body shape break the silhouette of the animal and make it appear like a broken branch. To make any sense, this means that the 50 eared owls should all be day-roosting and roost in trees and not in cavities since there would be no benefit to those that do not fall into this pattern. This does (mostly) seem to be the case with all tufted species being



Photo: M. Douglas

nocturnal forest/woodland dwellers. The camouflage theory therefore appears to work for tufted owls, but why then don't all day roosting, forest dwelling owls have ear tufts (the wood owl for example)? Maybe camouflage is not the whole reason.

Rinderpest R.I.P (28 June 2011)

One of the most important nature related events ever to take place in Africa was the rinderpest epidemic that swept through Africa from Europe and Asia killing almost all hoofed animals it contacted. In its wake, it left vast areas devoid of ungulates and entire nations in economic and cultural crisis. The disease has certainly killed hundreds of millions of cattle around the globe and may even have contributed to the fall of the Roman empire. At the height of its spread, It extended from Scandinavia to Cape Town and Brazil to Australia.

The disease, which was accidentally introduced into the

horn of Africa in 1887 is to be declared formally eradicated at a presentation in Rome on the 28th June this year..

The Global Rinderpest Eradication Programme (Grep) was launched in 1994 and initially focused on establishing the geographical distribution and epidemiology of the disease. The group then went on to try and contain rinderpest within infected ecosystems, and to eliminate reservoirs of infection. East Africa was the last area to be infected by the disease and is also the last place where the disease has been eradicated.

