

At the Heart of South Africa



KAROO ISSUES, WILD KAROO

Karoo Locusts: Plague or Protein from Heaven?

POSTED ON MAY 20, 2021 BY JULIENNE DU TOIT



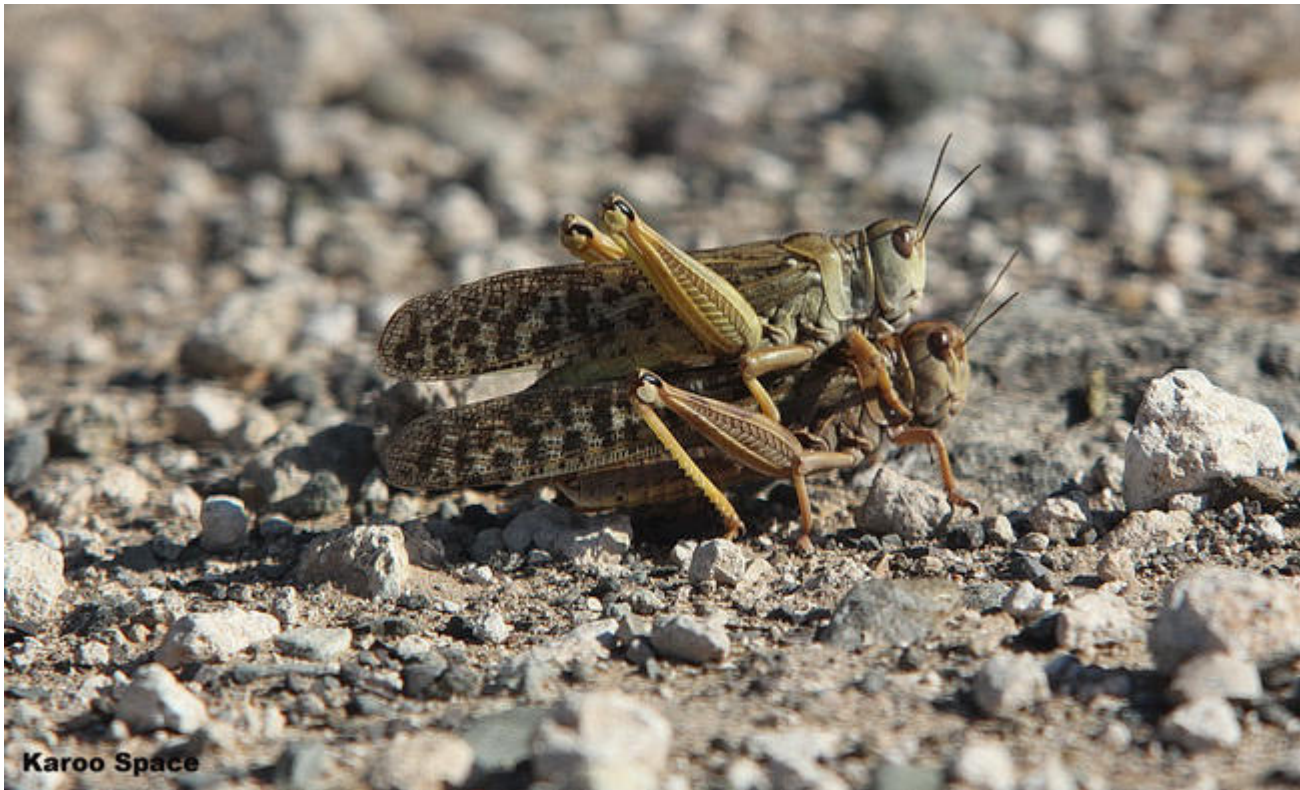
By Julienne du Toit

Photographs by Chris Marais

Nearly every Karoo farmer has experienced a locust swarm, has seen the skies darken with them, has watched them covering nearly every bush and blade of grass when they settle at night.

Once the dew and the morning coolth vanish, they take off and become aerial plankton, thinly spaced but apparently endless: flying, landing, eating and then taking off again. Where

disturbed, they make an eerie chittering noise. On bare patches, they mate and lay eggs.



Brown locusts, endemic to the Karoo, mate and then lay eggs on bare earth. These eggs will hatch when soil and air temperatures and humidity are exactly right.

Our bakkie is swiftly covered in dead locust parts. Chickens treat the radiator grille as a welcome buffet table on wheels.

An Insect-Based Ecosystem



A rooster crunches up locusts that met their maker on our bakkie.

Locusts are part of the Karoo's natural cycles, where 'natural disasters' have been observed as unfolding in a mostly predictable sequence over the centuries. Years of crippling drought are typically broken by devastating floods. Veld vegetation rebounds dramatically, only to be knocked back by locusts.

And until 1896, the insect swarms would sometimes be followed by mega-herds of *trekboeke* (millions of migrating springbok following the scent of rain and fresh grass) leaving the veld looking as if it had been scorched by fire.

Occasionally, the Karoo caterpillars – commonly known as *ruspers* – devour the Karoo bossies, then turn into unlovely speckled moths that swirl around outside lights in fluttering clouds.

The greatest part of the Karoo food chain, as any observant resident can tell you, rests disproportionately on insects and of course, insect-eaters, from birds to aardvarks.

The Karoo veld seems to thrive on brief periods of intense use – to the point of apparent near-destruction – and then long periods of rest and recovery.

The Moving Feast

As was predicted, the decent rains of 2020 and 2021 in parts of the central and eastern Karoo resulted in the exact combination of air temperature, soil and atmospheric moisture needed for the hatching of countless millions of brown locusts from the soil. They fell upon the freshly-grown forage that had flourished after the rains.

They first appeared in February 2021, then their hoppers hatched after the heavy spring rains in October 2021.



Karoo farming (herding Angora goats off to be shorn) through a locust swarm.

Locustana pardalina, also known as the brown locust, is endemic to the Karoo. Unlike the so-called red or desert locust that occurs further north, this one forms smaller swarms (dozens of square kilometres in size, as opposed to hundreds of kilometres), and reappears every eight to twelve years.

This year, they were bang on schedule. Dr Roger Price, research team manager at the Agricultural Research Council in Pretoria told *Farmers Weekly*.

“Over the past 40 years, brown locust plagues have occurred in 1985/1986, 1989/1990, 1994/1995, 2002/2001 and 2010/2011. The current outbreak is the first major outbreak in the past 10 years.”

Locusts, Yum



Greywing francolins had gorged themselves to such an extent that they could hardly take off.

We head off into the veld, and see how every living creature eats locusts – and yet they make not the smallest dent in the size of the swarms. We see greywing francolins so stuffed with locusts they could hardly take off. Guinea fowl, chickens, snakes, leguaans, lizards, meerkats, blue cranes, korhaans, black eagles, ostriches, goats, steenbok and kudu eat them. Jackals devour them, and oddly enough, so do sheep.

“It’s a Protein Storm,” marvels Graaff-Reinet farmer Rolie Kroon.

Locusts have been eaten by humans since Biblical times and before. According to those in the know, ripping off the head neatly removes the innards and the rest can be dried for future eating, or roasted and crisped in an oven. They are high in fat and protein, and those

who have eaten them swear they are delicious, with a flavour somewhere between peanut butter and biltong, depending on seasoning.

The gift that these gregarious grasshoppers leave behind is their dung, also called frass. It lies like thin layer of pale wheat grains. Their bodies soon join it.

Dreadful Poisons of the Past

Dr Gerhard Verdoorn, stewardship and operations manager of CropLife South Africa, pointed out that in early 2021, the locusts were laying a staggering number of eggs in the soil. Locusts typically reappear over a number of years when conditions are favourable.



Locusts absolutely everywhere.

“By September 2021, we could be seeing truly cataclysmic numbers of locusts,” he predicted earlier that year. “We’re specifically worried about swarms spreading north to the Free State plant crops including maize, or into Eastern Cape areas that are still drought-stricken, like Steytlerville and Jansenville.”

In decades gone by, dreadful pesticides were used by the tonne across the Karoo veld to fight the locust swarms – largely in vain.

Verdoorn says: "Organophosphates like Lindane, Parathion and Diazinon were used in massive quantities – all banned now. Using those poisons amounted to a crime against the environment. There are parts of the Karoo where you can still smell the Lindane in the soil during wet conditions. It harmed every living creature.

"I think its effects are only now starting to wane. I am seeing far more life in the Karoo now, from the armoured ground crickets and spiders to more mammals like steenbokkies. Where it has rained, the veld is looking incredibly good."

He says CropLife SA now advocates judicious use of pyrethroid insecticides like Esfenvalerate and Deltamethrin, sprayed by Government teams with knapsacks or mistblowers on bakkies.

Redistribution of Nutrients

Dr Roger Price of the Agricultural Research Council, based in Pretoria, has worked in the Karoo for 20 years, mostly in the Aberdeen and Graaff-Reinet area, doing research on more environmentally acceptable insecticides for locust control.

Along the way, he developed an enormous respect for locusts and the role they play in the ecosystem.

Locust dung is called frass. Where the swarms had been, this lay strewn in their wake.

“During large-scale outbreaks, the locusts are probably the greatest herbivore pressure in the Karoo. However, they are probably also the greatest force for the redistribution of nutrients around the Karoo, via their frass droppings and then their bodies. They are definitely one of the ‘key ecological drivers’ of the Karoo ecosystem. The importance and value of the brown locust in the Karoo ecosystem has not been properly studied and much detailed research work is needed.”

Dr Joh Henschel of the Arid Zone Node falling under the SA Environmental Observation Network (SAEON) which in turn falls under the National Research Foundation (NRF), is of the same opinion. In 2015, he wrote in an article titled *Perpetual Pendulum: Locustana pardalina*:

“Agriculturalists fear the collective consumptive power of billions of locusts, but have never actually quantified the economic effects of all that consumption to justify the costly control measures that have been undertaken, unquestioned.

“Ecologists laud the locusts’ presumed ecological roles in nutrient recycling, with swarms of locusts briefly feeding here, defecating there, and dying elsewhere, but have not actually investigated this. Furthermore, locusts are thought to lend dynamism to food webs, with numerous predators tracking locust abundance cycles and movements, altogether forming intricate patterns over time and space. Although it is thought that locusts are keystone species, critical for the integrity of Karoo ecology, this remains to be elucidated.”

Dung beetles, Locusts, Bees and Farmers

One thing has changed over the years – the attitude of many farmers. There are increasing numbers who balk at allowing poison sprayers onto their farms.

Dave Stern of Rietpoort Farm between Graaff-Reinet and Murraysburg is one.

He bends down to pick up a cowpat, turns it upside down to show how it is riddled with holes – dung beetles have industriously been burying this nutrient-rich stuff underground.

“We can’t do without these guys, or the bees or the ants. That’s why we don’t spray against locusts. A massive swarm covered all the bossies here. But look what they left us,” he says,

showing us the locust frass, which looks like pale wheat grains, thinly covering the earth.

Rolie Kroon says that locusts had taken 30% of his grazing.

Rolie Kroon of Excelsior Farm, examining the layer of frass left behind by the locusts.

“So I’ll have to adjust my grazing and animal numbers. But I know that when the rains come to areas that have been eaten by locusts, the veld springs up in better condition than before. Just look at all these locust droppings. They must have spread thousands upon thousands of tonnes of fertiliser across the Karoo.”

Locusts and Food Security

Dr Roger Price emphasises that the major worry with locusts is not the loss of grazing in the Karoo, but the protection of the maize-producing areas of the Free State and North West provinces.

“Before modern insecticides were used against outbreaks after WW2, the swarming locusts escaping from the Karoo used to devastate agriculture throughout southern Africa all the

way up to the Zambezi river. Food security was threatened in the region and the brown locust was considered to be South Africa's most serious pest problem.

"Farmers and landowners are legally responsible to report outbreaks on their land."

*Hundreds of thousands of locusts lying
dead along the roadside after being
sprayed.*

"The current spot-spraying strategy of locust control using the synthetic pyrethroid insecticides against the densely roosting locust targets has relatively limited environmental impact on the Karoo ecosystem. Although the insecticides will kill most insect species on contact, the residues break down after a few days and the spray plots are rapidly re-colonised by insect life from the surrounding veld. We found that even wingless species recolonised the spray sites within a year.

"However, the situation can get ecologically bad if specific sites are repeatedly sprayed or if large areas are sprayed. There is also a concern that some locust officers may heavily overdose when spraying as the machines in operation are old-technology and do not provide controlled area volume/dose rates."

Another Way

Rolie Kroon mentions that the best way to tackle locusts is when they are still hoppers, before they can fly.

“It is the weakest part of their lifecycle. Even if you spray water with dishwashing liquid on them, it kills them because they can’t breathe.”

Gerhard Verdoorn adds that driving a flock of sheep or a herd of cattle over them also works well, trampling them into the earth.

Roger Price points out the Plant Protection Research Institute has been working on alternative control strategies, and has found a fungus myco-insecticide called Green Muscle against the brown locust.

Verdoorn adds that while it does not kill the locusts immediately, Green Muscle stops them eating, and they die after a few days. Unfortunately, Agriculture officials did not register it for use in time for the current plague of locusts.

As regular as clockwork, every eight to twelve years, brown locusts emerge in the Karoo, devour all before them, redistribute nutrients throughout the ecosystem in a remarkable pulse lasting several months, mate and leave their eggs in the soil. They could be one of the Karoo’s key ecological drivers.

Herschel has the final word on these remarkable insects and their regular irruptions:

“Since 1797, agriculturalists have kept records of the oscillations of the Karoo Brown Locust, *Locustana pardalina*, with the pendulum changing from a solitary morph to gregarious, from few to many, from Karoo to across the southern African subcontinent. Then back again, from many to few, from gregarious to solitary, from subcontinental to Karoo. The locust pendulum perpetually continues despite unrelenting anthropogenic pressure, although this appears to have quickened the pendulum’s rhythm.

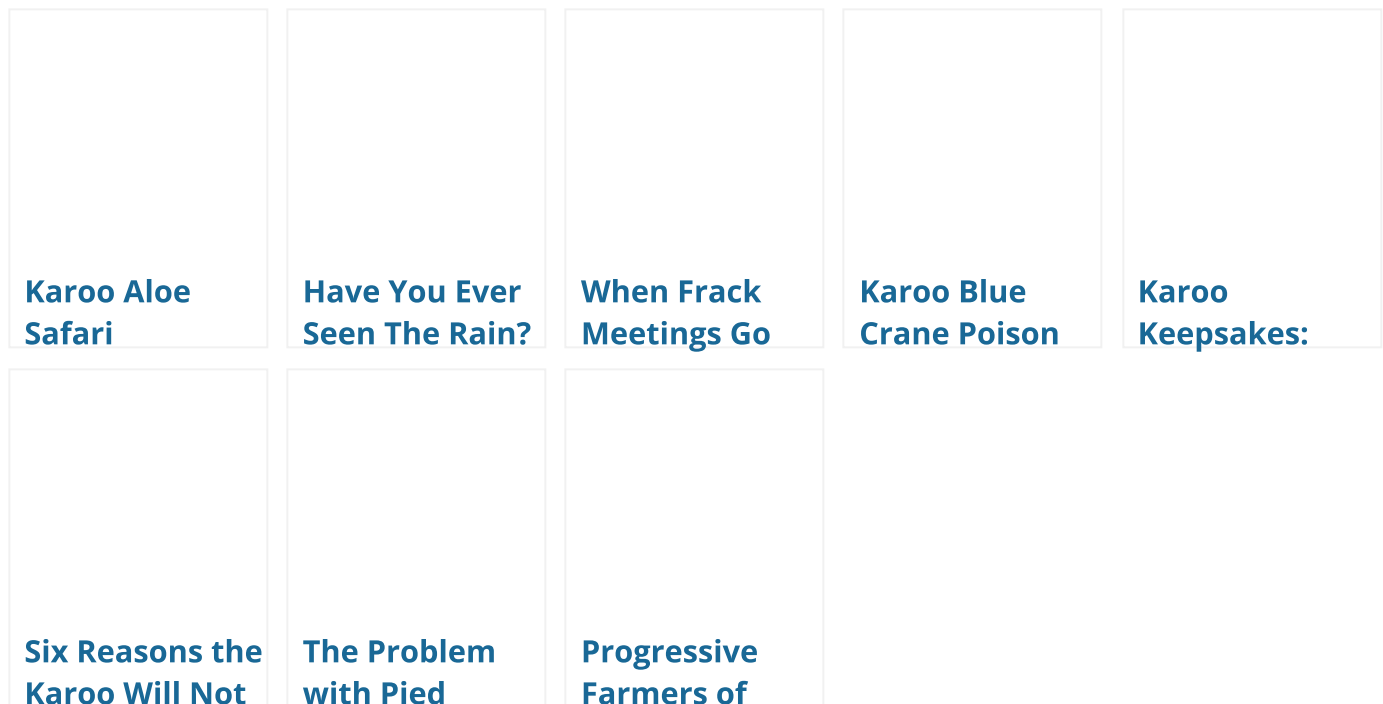
“SAEON scientists have good reason to be interested – not only are these 200-year-long records a rare long-term dataset, but the Brown Locust is also one of the few surviving Mega-herd phenomena, which periodically reshuffle things across the Karoo.”

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6 THOUGHTS ON "KAROO LOCUSTS: PLAGUE OR PROTEIN FROM HEAVEN?"

Paul Davies says:

We experienced a locust plague near Midshaft (on the current R390 between Oviston / Venterstad and Steynsburg) in about March 1971 during the construction of the Orange Fish Tunnel. The skies darkened and a mass of locusts descended. Driving was very hazardous and within a few hours anything green had been totally stripped. The locusts moved on and we didn't see any more during our 5 years in the Karoo.

What a strange experience for two very young people, newly arrived from London – totally outside our experiences.

MAY 20, 2021 AT 4:48 PM

[REPLY](#)

Henry A. Abbott says:

During the early years of locust control, arsenical pesticides were used in the Karoo and elsewhere. With the advent of DDT and the so-called "modern wonders" which have now also gone out of favour as did the Organochlorine pesticides due to their negative impact on the environment, the Arsenicals were first stockpiled. At a later stage they tried to incinerate them by burning in the oven of steam trains and cotnaminated large stretches of land under railway tracks. Somewhere in the 1950s or 1960s, I was told, the drums of Arsenicals was put on a boat and dropped in the sea far West of Walvisbaai after a journey of a week there and a week back, for many months.

MAY 20, 2021 AT 6:04 PM

[REPLY](#)

Suki says:

Interesting article – thank you

MAY 21, 2021 AT 8:59 AM

[REPLY](#)

Jane says:

When living in Dubai in the 70s a swarm of locusts blackened the skies. All the traffic stopped so the locals could collect the insects. They would cook them and then eat them. Was the first time I had ever heard of locusts. Not sure how they ended up in Dubai as in those days there was not much greenery for them to eat.

MAY 21, 2021 AT 11:43 AM

[REPLY](#)

Gustav says:

Here is an aspect I would like to see considered.

The locusts are just filling in a void that we humans have left in nature by killing of the millions of large grazing herbivorous that used to roam. Yes, locust were also present 200 years ago when these herds were still around, but what degree is difficult to determine compared to today, and how long do we need to go back to find the peak in large herbivorous numbers before humans interrupted?

We were able to kill of the large herding animals, but we were not able to kill of the locusts so they've taken over their role.

Even though the locusts are able to replace the role of cycling nutrients that large herbivorous used to carry often to a larger degree, the ability they do not carry compared to a large grazing animal, is the vital hoof action which creates -Animal Impact.- Animal impact from a large herd of grazing animals when trampling across the grassland does mainly two things. It breaks the capped surface on the soil and tramples down plant growth covering up the soil.

Both of these services will encourage plants to sprout and grow, covering up bare soil, and as we know locust doesn't thrive in covered soil, they prefer bare soil.

IMO you have to choose between, locust, wild grazing animals, or properly managed livestock that covers up bare ground via animal impact and cycles dead growth.

MAY 23, 2021 AT 6:57 PM

REPLY

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Tel: +27 (0) 48 881 2660

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