



# Kalahari dunes

## Can the Kalahari's new wig cover up the truth?

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Ripples of dunes suspended in time, ancient ripples, which seem to have rusted to a terracotta hue. Glossy magazines and family photos are singularly incapable of capturing the romance and visual impact of a Kalahari dune. Of being immersed in the terrifying solitude. The words spoken by the bushman Diä!kwain in the late nineteenth century, convey a sense of the timelessness of this sand wilderness. For the careful observer these sentiments do however also carry a more sinister message. It is a message of ecological portent and significance.

*the wind blows our footprints away over the plains  
if the wind does not blow  
our footprints lie there for everyone to see  
as if we are still living  
that is why the wind blows when we die  
to take our footprints with it*

When travelling northwards from Upington towards the Kgalagadi Transfrontier Park, there is a gradual transition in the physical landscape and in the vegetation type. The flat plains of the upper Nama Karoo gradually metamorphose into the transitional Karroid Kalahari Bushveld before finally resolving into the Shrubby Kalahari Dune Bushveld.

Visitors to the Kalahari in the last few years will have been struck by the immense sea of greenery, stretching from horizon to horizon. In places, bald dune crests protrude where the vegetative wig could not be stretched sufficiently to provide full cover. Many visitors are disappointed by the absence of barren rolling sand dunes

TOP: Dune crests are inhospitable. Without the protection provided by the dune reed, *Stipagrostis amabilis*, it is difficult for plants to establish and persist.

MIDDLE: Kalahari sour grass, *Schmidtia kalahariensis*, is present throughout the Kalahari, but large 'monostands' can indicate over-utilization.

ABOVE: Driedoring, *Rhigozum trichotomum*, proliferates when veld is mismanaged, contributing to bush encroachment.

Photos: C. Geldenhuys.





ABOVE LEFT: The silver sheen of pastures of grass after the good rains in the Kalahari is a spectacular sight.

ABOVE RIGHT, TOP: A prolonged period of over-utilization of dune veld leads to the removal of dune crest vegetation.

ABOVE RIGHT: Gemsbok in a landscape. The sea of grass seen in the Kalahari recently is mostly bushman grass (species of *Stipagrostis*) and Kalahari sour grass (*Schmidtia kalahariensis*).

RIGHT: 'our footprints lie there for everyone to see'. All animal life (including humans) leaves a mark on the Kalahari.

Photos: C. Geldenhuys.



that have become synonymous with the Kalahari. From an ecological point of view however, green seems good, but the sea of green can be misleading as to the real state of the environment.

The southern Kalahari is characterized by two main land-use types. Commercial farms dominate the area from Upington in the south to the Botswana border in the north. Communal farms are more common to the south and west of Twee Rivieren, an area generally known as the Mier area. A measure of the degree of care that is taken by landowners in managing their land can be gauged by taking a closer look at the vegetation, or the lack thereof. There are three important visual indicators, which can be used by even the greenest of ecologists for assessing the condition of the veld. The first is the presence of the shrub *Rhigozum trichotomum*. This shrub, generally known as drieroring, because of its distinctive three-pronged stem growth form, is an important species in bush encroachment. In over-utilized veld its abundance increases markedly. At intervals on the northwards drive through the duneveld from Upington to

Askham, areas of land are visible from the road that consist almost exclusively of stands of *Rhigozum trichotomum*. These sections have been over-utilized to a great degree over some period of time. Drieroring has a rather shallow root system that depletes the soil surface of moisture, which makes it difficult for other plants species to establish and persist. It is common to see vast 'monostands' of drieroring with very little vegetation between these shrubs. But, there is another species that can come to dominate the green matrix.

Kalahari sour grass *Schmidtia kalahariensis* is part and parcel of the Kalahari. It is impossible to speak or think of the Kalahari without invoking this species. It is ever-present and yet, it is a good indicator of veld condition.

Kalahari sour grass will become very dominant in over-utilized veld. This grass, which is glandular and sticky all over, can occur in dense 'monostands' as though it was sown for agricultural purposes. Often it will occur with drieroring in areas of over exploitation. It is grazed during the early stages of development and when dry, but it is an annual species and is not a consistent source of fodder. It is not the presence of sour grass per se that is the problem, but rather the simultaneous total absence of perennial grasses and shrubs. The grasses that all landowners and managers wish to see en masse are the palatable perennials, gha grass *Centropodia glauca*, tall Bushman grass *Stipagrostis ciliata* and small Bushman grass *Stipagrostis obtusa*. After the good





“And when a farmer takes exception to your rollicking about on his dunes with a quad bike and other forms of vehicular fun, know that it is because he cares and understands.”

TOP: An uncommon, but extravagant species for the Kalahari is the klapperbos, *Nymania capensis*, with its beautiful flowers and fruit. Photo: C. Geldenhuys.  
ABOVE: The pink flowers of ghaap, *Hoodia gordonii*, have a strong smell of decaying flesh that attracts pollinating flies and blowflies. It has various medicinal properties. Photo: C. Geldenhuys.



rains recently the silver sheen of an old man's beard over the veld is a sight to behold, especially in the late afternoon and early mornings.

The third indicator that should be observed is, in fact, directly opposite of what we regard a healthy Kalahari to be. Bare dune crests evoke all the romantic ideas and sentiments of 'Kalahari' that we cherish but, bare dune crests are symptoms of over-use. Dune reed *Stipagrostis amabilis* is an endemic and very characteristic species of the Kalahari dune crests. It is a very tough and relatively unpalatable grass that has an important protective function. It shields other species from the windy and abrasive conditions prevailing on the dune crests. In the process, dune reed indirectly maintains the seed bank for other species such as *Limeum arenicolum* on the dune crest.

Under conditions of severe over-utilization, the populations of palatable species in the dune valleys and dune slopes become so depleted that game and livestock move to the dune crests for grazing. Here the dune reed, which has such an important stabilization function, is grazed and starts to decline. The result is bare, lifeless dunes, subjected to the onslaught of the sun, wind and merciless sandblasting. Under prolonged periods of bad management, dunes devoid of vegetation will flatten out to form 'table tops' as a result of the relentless scouring of the wind. Sites like these prove very difficult to rehabilitate since the dunes have, for all intents and purposes, been removed.

Having had a glimpse at some of the dynamics of the Kalahari as well as the sores and scars that are not always seen for what they are, let us now re-think the words of Diä!kwain. If our footprints have become too prominent on the (bare) dunes that we love, it is perhaps necessary to walk away for a while and allow the wind to blow our footprints from the battered land. The Kalahari can, like most ecosystems, recover given time and proper treatment. The crucial part is to read the signs before the damage is done. So, next time you head out for the solitude and incomparable majesty of the Kalahari, take a closer look. Look critically. And when a farmer takes exception to your rollicking about on his dunes with a quad bike and other forms of vehicular fun, know that it is because he cares and understands. He knows that this land, although kindled in a fiery furnace, is as fragile as any. 🌱



ABOVE LEFT: In the early mornings the sand dunes are littered with stories of dining, moonlighting and death. Photo: C. Geldenhuys.

ABOVE RIGHT: If dunes are devoid of soil stabilizing vegetation for long periods it can lead to dune top flattening by wind. Photo: C. Geldenhuys.

BELOW: The fruit of tsammias, *Citrullus lanatus*, are an important source of moisture and are loved by gemsbok. The Kalahari can produce an abundance of these 'melons' after good rains. Photo: C. Geldenhuys.



BELOW: Meerkats are common residents of the Kalahari. They too benefit from 'Garden of Eden' conditions in the Kalahari. Photo: C. Geldenhuys.

**Further reading:**

Krog, A. 2004. *The stars say 'tsau': /Xam poetry of Diä!kwain*, Kweiten-ta-//ken, /A!kunta, /Hankasso and //Kabbo / selected and adapted by Antjie Krog, with drawings and watercolours by Da, Diä!kwain, /Hankasso, !Nanni and Tamme. Kwela Books, Cape Town.

Low, A.B. and Rebelo, A.G. eds. 1998. *Vegetation of South Africa, Lesotho and Swaziland*. Department of Environmental Affairs and Tourism, Pretoria.

Van Rooyen, N. 2001. *Flowering plants of the Kalahari dunes*. Ekotrust, Pretoria.

