

Khaudum

A Safari Guide with Path Map and Satellite Image

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Introduction

Khaudum National Park is one of Namibia's wildest corners. Here, one can enjoy the real Kalahari far from the main tourist routes. This in Namibian dimensions small, but still 3 841 km² large park offers the great opportunity to experience the unique flora and fauna of the "Northern Kalahari Sandveld".

Khaudum National Park is located in the south-eastern corner of Namibia's Kavango Region. The Park was initially proclaimed as a game reserve in 1989. In this game reserve local residents were allowed to move and hunt on a sustainable basis. In 1998 Khaudum's status was upgraded to a national park.

Sparsely populated lands surround the park. Kavango people, mainly belonging to the Gciriku tribe live west and north of the park, whereas San people/bushmen are the main residents south of it. The area south of Khaudum is known as the Nyae-Nyae Conservancy, a large communal area in which local residents are entitled to utilize their wildlife on a sustainable basis. Wildlife migrates between the conservancy and Khaudum, as no fences separate these two areas. In this way Khaudum National Park, the Nyae-Nyae Conservancy and the surrounding lands form a more than 11 000 km² large contiguous wilderness area.

The Landscapes of Khaudum National Park

The Khaudum Park is build up by an undulating sand plain, the sandveld, in the north. Rare small flat ridges of finer grained red sand, which are interpreted as relictic dunes, rest on this plain. The south-eastern part of the park is characterised by large fossil dunes. The south-western part is known as the hardveld: bedrock areas of quartzite and subordinately phyllite alternate with shallow, sandy to loamy soils. Mostly inconspicuous calcrete terraces occur in the vicinity of dry rivers.

The hydrological system of the park is characterised by the two rivers Nhoma in the south and Khaudum in the north, and their tributaries. Both rivers are ephemeral; they carry water only in some years after extraordinary rain events. In Namibia such rivers are called "Omuramba" (plural Omiramba). Both Omiramba have a very different appearance: Omuramba Nhoma cuts through rocky areas leading to steeper benches than Omuramba Khaudum which is situated in an area of loose sand. Further

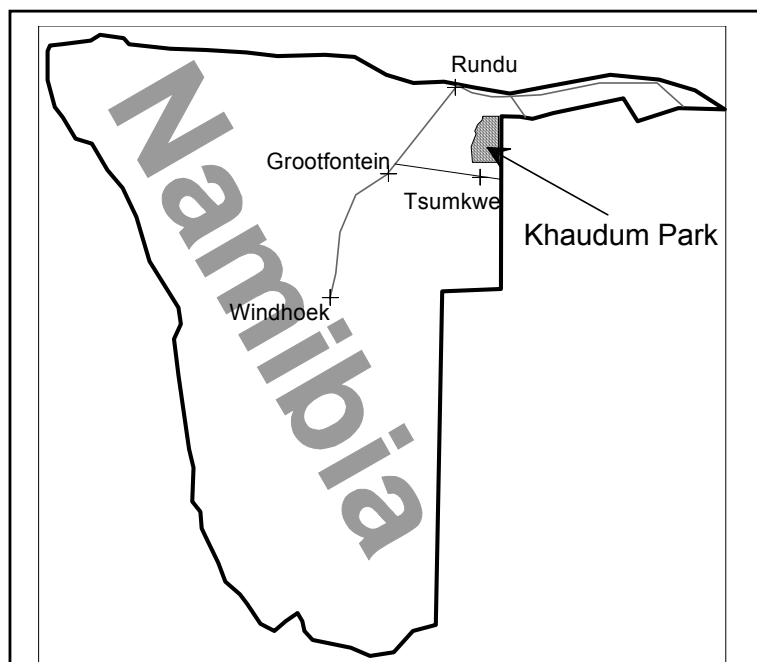


Figure 1: The Khaudum National Park in Namibia

hydrological features are shallow pans which are often found in the relictic interdune valleys between rudimentary dunes. These pans collect the local surface runoff produced after heavy rains. The water in these pans infiltrates the ground very slowly or evaporates, thus, in good rainy years, providing natural water points for wildlife lasting into the first part of the dry season.

In Khaudum precipitation occurs from September to April, with the peak rainy season ranging from late December to early March. The rain amount increases from the southwest to the northeast with mean values from 430 to 550 mm/year. The nearest official rain station is Tsumkwe, where the rainfall has been recorded since 1963. On average 436 mm/year is reported from this station with fluctuations between 190 and 1020 mm/year.

The minimum temperature, measured at the weather station Rundu, is 7°C during July and 19°C during January on average. Typical maximum day temperatures reach 26°C in July and 33°C in January, although some days experience far higher temperatures. And shade and sun temperature differ a lot.



Figure 2: Vegetation types of Khaudum Park

- Top: Camel Thorn trees at the edge of Omuramba Nhoma at Tari Kora. Termite mounts indicate harder soils compared with the sands of the sand plains
- Middle: Mixed bushveld in front of a dune. Zambesi Teak grows on the dune crest
- Bottom: Savanna with Wild Seringa and False Mopane

Flora

The Khaudum Park subdivides in two major vegetation zones. The vegetation communities of the northern and central part are typical for the Eastern Drainage System of the Kavango Region. There, sandy plains are dominated by Silver Cluster-leaf, Coffee Bauhinia, Kalahari Apple-leaf, and Sand Camwood. When the sand becomes thicker, the shrubs are firstly becoming taller, and then the species are forming trees with Wild Seringa, False Mopane, Kiaat, and Manketti becoming common constituents. Leadwood and Russet Combretum are typical for the edges of Omiramba and pans. In addition African Wattle, Sicklebush, Sandveld Acacia, Black Thorn, Candle-pod Thorn, Camel Thorn and Buffalo Thorn occur. The latter two trees are thought to indicate underground water. Camel Thorn grows even on deep sand as long as its deep-reaching tap roots reach underground water.

Small Makalani Palms mark the waterline at the southern flank of Omuramba Khaudum west of Khaudum Camp. A beautiful Wild Seringa savanna grows on the sand plains north and south of Khaudum Omuramba. Close to the western park border tall umbrella-shaped Manketti trees give this savanna the charm of old-grown parkland.

The vegetation communities in the southern part of the park correspond more with the Southern Pan Field vegetation, which is the prominent vegetation zone of the Nyae-Nyae Conservancy. Shallow soils dominate as blankets of thick Kalahari Sand occur only locally. Giant Baobabs are the most spectacular feature in this vegetation zone. Only two individuals occur in the park near the abandoned waterhole Kremetart. Kudu Bush together with Lavender Croton mark bedrock ridges with sparse soils. Dense, almost monospecific forests of Purple-pod Cluster-leaf follow shallow bedrock ridges, which are commonly covered with loamy calcareous soils. Though not very scenic, these are the places with some guaranteed shade. Silver Cluster-leaf, Coffee Bauhinia, Kalahari Apple-leaf and Sand Camwood dominate whenever the soils become thicker and sandier. Hard white calcrete crusts are almost exclusively covered by Trumpet Thorn, Yellow Rhigozum and occasionally Black Thorn. Camel Thorn, Russet Bushwillow, Leadwood, and Buffalo Thorn are typically associated with drainage lines. Locally the flanks and rarely also the floors of dry rivers support Black Thorn, Sicklebush or Shepherd's Tree. Broad-leafed woods grow on the up to 30 metres high dunes that characterise the area around Baikiaea waterhole. Tall forests of Zambesi Teak mark the dune crests and herewith make the dunes appearing higher than they are. Wild Seringa, Silver Cluster-leaf, Weeping Bushwillow, Tall Common Commiphora, Kiaat, and Blade Thorn grow preferably on dune flanks.

Grasses dominate the floodplains in dry rivers. The genera *Eragrostis* and *Sporobolus* are common in the southern Omiramba. Short Couch Grass forms gulf course-like turfs in the northern Omiramba Khaudum and Quiba. Impressively tall reeds grow in moist sites of these two rivers, providing a perfect hide for lions. Long-awned Grass, a quite hard grass of low grazing value, grows preferably on deep sand. The conspicuous Common Finger Grass is common in large parts of the park. It is a nutritious grass, not directly for men, but for their potential prey.

Most of the mentioned trees and shrubs are traditionally used by the Bushmen for nutritional, medical, and spiritual purposes (Table 1). Nowadays most Bushmen live in a number of villages south and west of the park.

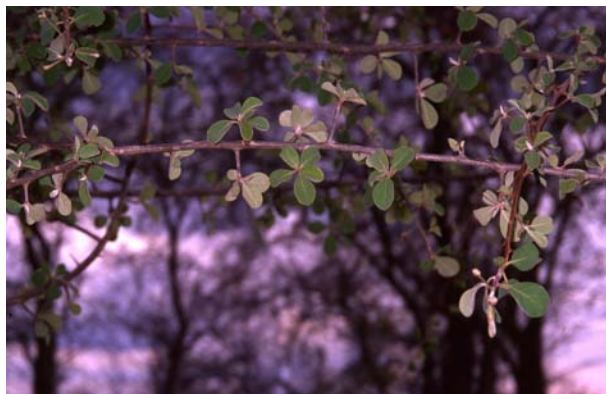
Table 1: Common plants in the Khaudum Park and their traditional use by the Jul'hoansi

Common name	San name	Use
African Wattle	gláitsàò	<i>Other:</i> ground wood is used as body powder
Baobab	#òm	<i>Nutritional:</i> pulp is mixed with water or milk, seeds serve as a substitute for coffee <i>Other:</i> fibres are used for rope
Black Thorn	gláún	<i>Nutritional:</i> gum (mainly during the hunt) <i>Medical:</i> chewing the bark against cold <i>Other:</i> toothbrush
Blade Thorn	n#aqng	<i>Nutritional:</i> gum <i>Medical:</i> root
Buffalo Thorn	n#ah	<i>Nutritional:</i> ground fruits
Camel Thorn	l'ànà	<i>Medical:</i> root and thorns <i>Other:</i> seeds in jewellery
Candle-pod Acacia	!oò	<i>Medical:</i> root against chest pain and coughing
Coffee Bauhinia	glòà	<i>Nutritional:</i> roasted green pods and the outer part of the roots, brown pods as a substitute for coffee
False Mopane	!ù'í	<i>Nutritional:</i> seeds are baked <i>Other:</i> wood carving
Kalahari Apple-leaf	'haoh	<i>Medical:</i> tea against cough made from the bark, tea against a cold from the root <i>Other:</i> wood carving, toothbrush
Kiaat	n#hàng	<i>Ceremonial:</i> ground wood is used to give strength to women <i>Other:</i> wood is used for knives and musical instruments
Lavender Bush	n#oaqnáhàn	<i>Other:</i> trunk as building material, eating sticks
Leadwood	#'ò	<i>Medical:</i> leafs <i>Other:</i> valuable firewood
Manketti	g kàá	<i>Nutritional:</i> fruits are eaten and used for the extraction of oil <i>Other:</i> traditional fire lighting
Makalani Palm	!hání	<i>Other:</i> nut is carved, leafs for baskets, jewellery, ropes and musical instruments
Peeling-bark Ochna	!àì	<i>Nutritional:</i> seeds are used for oil extraction <i>Other:</i> carving pipes and spoons
Purple-pod Cluster-leaf	!ù	<i>Nutritional:</i> leafs and fruits to produce tea <i>Other:</i> ground wood is used as body powder
Raisin family		<i>Nutritional:</i> fruits
Russet Combretum	!kàbè	<i>Medical:</i> leafs and root <i>Other:</i> branches for musical instrument
Sand Camwood	g!ù'úrí	<i>Nutritional:</i> seeds as a substitute for coffee <i>Other:</i> toothbrush
Sicklebush	!kái	<i>Other:</i> digging sticks
Shepherd's Tree	zàqn	<i>Nutritional:</i> fruits <i>Medical:</i> root
Silver Cluster-leaf	za'ò	<i>Medical:</i> bark and leafs against cold, leaves against fever and malaria <i>Nutritional:</i> caterpillar, dried leafs as a substitute for tobacco <i>Other:</i> gum as glue for poisonous arrows, carving of kitchen utensils, trunks as building material, strips of the bark are used to carry medical or lucky charms
Tall Common Commiphora	n!'hòg!òq	<i>Other:</i> wood carving, drums, dried gum for washing
Trumpet Thorn	!àì!àricè	<i>Other:</i> digging sticks
Wild Seringa	!kù	<i>Nutritional:</i> caterpillar <i>Medical:</i> juice against eye problems <i>Ceremonial:</i> root for a good hunt
Yellow Rhigozum	!àq'áí	<i>Other:</i> digging sticks
Zambezi Teak	glòà	<i>Other:</i> seeds in jewellery



Figure 3: Trees of Khaudum Park

- Top left: Baobab *Adansonia digitata*
- Top right: Manketti tree *Schinziophyton rautanenii*
- Middle left: Purple pods of the Peeling Bushwillow *Combretum psidioides*
- Mid. right: Silver Cluster-leaf *Terminalia sericea* with fruits
- Bottom left: Branch with clustered leaves of Purple-pod Cluster-leaf *Terminalia prunioides*
- Bott. right: Shepherd's Tree *Boscia albitrunca* with its characteristic whitish trunk





Fauna

The Khaudum Park is known for its rare Roan Antelope and Tsessebe, both are more common in the northern part of the park than in the south. If you are lucky, you may also see the endangered African Wild Dog. Great numbers of Elephants occupy the park during the dry season with over 3000 animals counted during full-moon game counts. Giraffe, Eland, Gnu, Red Hartebeest, Kudu, Gemsbok, Steenbok, Duiker, Bat-eared Fox, Hyena, Lion, Leopard, Jackal, Warthog, Vervet Monkey, Ostrich and Antbear populate the park throughout the year.

The Nyae-Nyae area south of Khaudum Park is a real bird watcher's paradise during summer. The pan field is famous for its Flamingos and Cranes. Ducks, Spurwing Geese, Crakes, Egrets and Herons are common other water birds. Among others Blacktailed Godwit and Great Snipe populate the area. Although to a lesser extend, also Khaudum Park offers

habitats for most of these species. A speciality of Khaudum is the Southern Ground Hornbill which, with some luck, can be spotted in Khaudum's northern woodlands.

On Tour in the Park

Khaudum is a wild place and so are its animals. Be aware that elephants may turn into aggressive giants when they are approached insensitively. The visitor should be particularly careful in winter, when water is sparse and the animals fight for the best places at the waterholes. In deep sand there is little chance to escape from a furious tusker, even if you drive the fanciest bakkie.

Track conditions depend on substrate, weather, frequency of vehicle use, and maintenance. As a tendency, deep sand tracks occur on red or white loose sands. Those tracks are easiest passed in early mornings, when the sand is still cool and firm. With minor silt contents sandy tracks are firmer, but they might become heavily corrugated, especially if they are on the main routes and when they haven't seen a grader for a long time. Tracks on silty or clayey soils are quite hard when dry, but they may become very slippery after heavy rains. Potentially slippery soils are often indicated by their darker colours, but also the unconsolidated white lime soils in Khaudum Omuramba turn into an effective lubricant when they are saturated with water. Deep ponds that may fill up on tracks usually dry up quickly. Waiting a day helps to keep the shovel and rope packed.

With 12 official waterholes and 2 small natural springs Khaudum Park offers enough targets for game viewing. The remoteness, low numbers of visitors and minimal infrastructure might help the little extra to make it a real safari, however. With 4x4 and some experience in sand driving you will enjoy a great park. Map 1 shows tracks and waterholes with the relevant way points given in Table 2. Besides the given tracks, the borders of the park act also as "roads" but their use is restricted to park staff.

The distances in kilometres along the tracks are compiled from several sources. Where a discrepancy occurred between sources, we have stayed on the safe side by giving the longer distance.

Detailed topographic maps can be purchased from the Surveyor General in Windhoek. Maps 1820 DA Tamsu, 1820 DB Khaudum, 1820 DC, 1820 DD Nhoma, 1920 BA, Sikereti, 1920 BB Xawashe cover the largest part of the park in 1: 50 000 scale. At the time of writing (July 2006) maps 1820BC and 1820 BD were out of stock. Maps 1920 Tsumkwe and 1820 Mukwe in 1: 250 000 scale provide overview maps. Please note that some tracks and waterholes are not on the latest level, e.g. the waterhole Baikiaea and Khaudum were repositioned after the print of the maps (2002).

Logistics

Khaudum National Park is open throughout the year. Due to its remoteness, missing infrastructure and track conditions, the Ministry of Environment and Tourism (MET) asks

tourist only to travel in groups of at least two cars. This regulation is not always controlled and some guide books and internet pages consider this rule to be exaggerated. From our point of view this opinion is irresponsible! We strongly recommend that you visit Khaudum Park with at least two reliable 4x4s. During the rainy season an average of 1 car per week visits the park. In the dry season it is up to 10 cars per day, but you cannot be sure that anyone else will be on your route. You also have to be aware that pulling a broken car out is almost impossible. And how easily and cheaply can spare parts and mechanics be brought to a park, from which the next proper garage is far more than 100 km away?

The tracks in Khaudum require mainly 4x4. High clearance is a must. Petrol cars easily consume double the amount of fuel in thick sands than under normal conditions. This should be strongly considered. It might be worth to top up your normal off-road equipment with a second shovel and sand sheets especially if you plan to use the infamous “55 km Khaudum-Katere” where the track is often deeply incised by supply lorries. When visiting the park in late winter, one should be aware of bushfires, which frequently occur during this time of the year. If visiting the park during summer, the radiator needs to be cleaned from grass seeds frequently; otherwise a fountain of steam will eventually erupt. A net is highly recommended but helps only for a short time. A hand broom is good for the rough cleaning (~ every 10 min) while a compressor is highly recommended for the proper cleaning (~ every 40 min).

The plentiful green vegetation during the later rainy season makes the park surely a very special and beautiful experience but, as mentioned above, some tracks become quickly impassable after heavy rains. Additionally game viewing is rather limited compared to winter as the game stays retreated in the bush where they use natural water ponds instead of the “official” waterholes.

August to October is clearly the main season in Khaudum. But if you like to experience a “greener” and “lonelier” Khaudum and are not bothered by temperatures up to 40°C in the shade, November and December might also be worth a visit. Game is still visible and less stressed by the lack of water as during the dry season.

Tour Suggestions

Khaudum Park is usually crossed from south to north with only one overnight stay, mostly in Khaudum Camp. But its unique beauty and wildness invites surely for adventures of several days – as long as you have enough petrol or diesel. There are just 3 suggestions to spend between 1 and 3 nights in the park:

1) Entering Khaudum Park from the south, visit of the waterholes Soncana, Omuramba, Tsau and Burkea. Night in Khaudum Camp, leave the park via Katere.

2) Entering Khaudum Park from the south (you have enough time to see Dorslandboom) and visit of Tsoanafontein, then overnight in Sikereti. Drive via Soncana, Tari Kora, Leeupan to Doringstraat, than take the detour towards Omuramba Khaudum and Khaudum Camp. Overnight in Khaudum Camp, leave the park via Katere.

3) Entering Khaudum Park from the South (again, you have enough time to see Dorslandboom) and visit of Tsoanafontein, and overnight in Sikereti. Drive to Baikiaea, Tari Kora and via Little Fontein to Omuramba, sundowner in Soncana; then back to Sikereti for a second night there. Drive via Elandsvlakte, Tsau und Burkea to Khaudum, night in Khaudum Camp, leave the park via Katere.

The view from Khaudum Camp over the Omuramba is unique and a second night in Khaudum Camp allows a shady rest day with game observations at the nearby waterhole without driving. This also allows a very early start in the next morning to Katere when the sand is still cold and firm.



Coming from the North, Khaudum can be reached from the B8 near Katere. Watch out for a sign to Khaudum, which lies in ca. 110 km distance from Rundu or ca. 80 km from Divundu/Bagani. Deep sand tracks occur immediately after the turnoff, reinforcing the hint of the sign for Khaudum “4x4 only”.

Description of Tracks

Grootfontein – Tsumkwe - Sikereti: The distance from Grootfontein to Tsumkwe is ca. 300 km, and the first 50 km on the B8 are tarred. The C44 leading to Tsumkwe is a gravel road that deteriorates in condition as one drives eastwards. Therefore, slow driving is recommended. The road to Sikereti starts at Tsumkwe junction as a gravel road (opposite to the Self Help Supermarket) but becomes quickly a sand track, which is in parts very sandy. The track passes by the turn-off to the Giant Baobab Dorslandboom (~34 km north of Tsumkwe). After passing the Park Gate it is another 7 km to Sikereti Office. The track leads directly to the office by passing the turnoff to the campsite to the right.

Sikereti - Tsoanafontein: Coming from Sikereti Office one has to follow the Tsumkwe track for a few hundred meters and then turn west. The track first leads around Sikereti air strip on hard soil through tall Purple-pod Cluster-leaf woods. A part in deeper sand in bushveld of Silver Cluster-leaf follows until reaching the Omuramba Nhoma. There the track runs on harder soil, but the terrain is more obscured by thick Acacia bushveld. The crossing of the Omuramba becomes difficult or impassable after heavy rains (Sikereti staff knows).

Sikereti - Soncana: Two alternative tracks lead to Soncana. For the more frequented – coming from Tsumkwe- pass straight by the Sikereti Office. For the alternative route turn left before you reach the office. The more frequented (eastern) track runs almost exclusively through Silver Cluster-leaf bushes, only one Purple-pod Cluster-leaf wood, similar to the one at Sikereti, is traversed.

Soncana - (Samagaigai) - Kremetart: This track is used seldom. It runs on calcrete and on hard soil. The turnoff to Kremetart is difficult to find, in a very poor condition, and becomes impassable in the rainy season. If you really like to see a huge Baobab it is strongly advised to visit Dorslandboom or use the camping facility at Hoolboom near Tjokwe (Djxohoe) in the Nyae-Nyae area (booking through Nyae Nyae Conservancy).

Soncana - Omuramba: The Omuramba Nhoma is crossed east of Soncana and the track then leads north on hard sand, calcrete crusts and hardrocks. The turnoff to Omuramba waterhole is easy to find. Acacia bush dominates throughout the drive, only seldom interrupted by Silver Cluster-leaf or nice views over the valley of the Omuramba Nhoma to the east.

Soncana - Baikiaea: Follow the sign rock east of Soncana. The track first runs in the valley of the Omuramba Nhoma and a small tributary on hard soils. But this track quickly develops into perfect playground sand. Coming closer to Baikiaea waterhole dunes develop, in which short sections of hard soils alternate with longer sandy parts up and down the dune. Luckily this track is not much used so that corrugation is minor. The turnoff to Baikiaea leads you through an open forest of Zambezi Teak that shows beautiful violet flowers in summer.

Baikiaea – Tari Kora: This track “sands” through dunes adorned with Zambezi Teak until you reach Omuramba Nhoma. The route in the Omuramba is on hard soil, and is therefore at places a bit bumpy. This track becomes impassable after heavy rains due to a high clay content and perfect mud. Vegetation-wise Black Thorn thickets are alternating with more open areas of Camel Thorn trees and shrubs of Russet Bushwillow and Buffalo Thorn.

Omuramba - Dussi: The track is easy, but slow driving is recommended due to sharp bends. Acacia shrubs dominate the landscape.

Omuramba - Elandsvlakte: Going northwest, the sand becomes continually thicker. The track is not much frequented and thus has only minor corrugations. Some dry rivers are crossed in the southern part. The northern third runs through woodland of Wild Seringa with some beautiful Kiaat trees interrupted by a larger grass pans.

Dussi - Elandsvlakte: The track first runs on hard soils, but loose, deep sand dominates the western half. Most of the route is accompanied by woodland of Wild Seringa.

Dussi – Tari Kora: The route in the Omuramba is on hard soil, but at several locations it is washed out by smaller tributaries. The small spring Little Fontein (reference point 13 in Map 1) can be found more easily when coming from the Dussi side.

Elandsvlakte - Tsau: Deep sand. The part of the track going east-west is not maintained on a regular basis and fallen trees have to be driven around or pulled away. This track takes a long time and is used very seldom, but the treed landscape is beautiful.

Dussi - Tsau: The track runs through thick sand. It guides you mainly through savanna of Wild Seringa including large trees of Kiaat and False Mopane. A small number of inconspicuous red-soil rides are crossed that are covered by shrubs of Bushwillows, trees of African Wattle, and termite mounts.

Tari Kora - Leeupan: Again, sections of this track run through thick sand. The Wild Seringa woodland is interrupted by several pans that are dominated by shrubs and small trees of Acacia and Russet Bushwillow. Grass plains form the central parts of some pans.

Tsau - Leeupan: This route is not much used although it is easy to drive as it runs on hard soil. The track actually follows an array of several elongate pans that are circled by Acacia, Bushwillows, African Wattle and Silver Cluster-leaf.

Tsau - Burkea: The track runs through thick sand. The turnoff to Burkea waterhole can almost be missed within the tall Wild Seringa woodland. It is just before a conspicuously large False Mopane tree. The sand is less thick on the turnoff from where it runs along a beautiful large grass pan that is partly surrounded by Leadwood and Camel Thorn trees.

Burkea - Khaudum: The track runs through sections of loose and silty sands. The southern part of the route leads through Wild Seringa woodland, the Omuramba is very distinct as an open grass plain. The part in the valley of Omuramba Khaudum is very relaxing. Only after heavy rains it may give some difficulties as the Omuramba surface turns into slippery lime mud. The Wild Seringa woodland reaches almost the southern bank of the river, while Acacia, Buffalo Thorn, Bushwillows and Sand Camwood cover the northern bank.

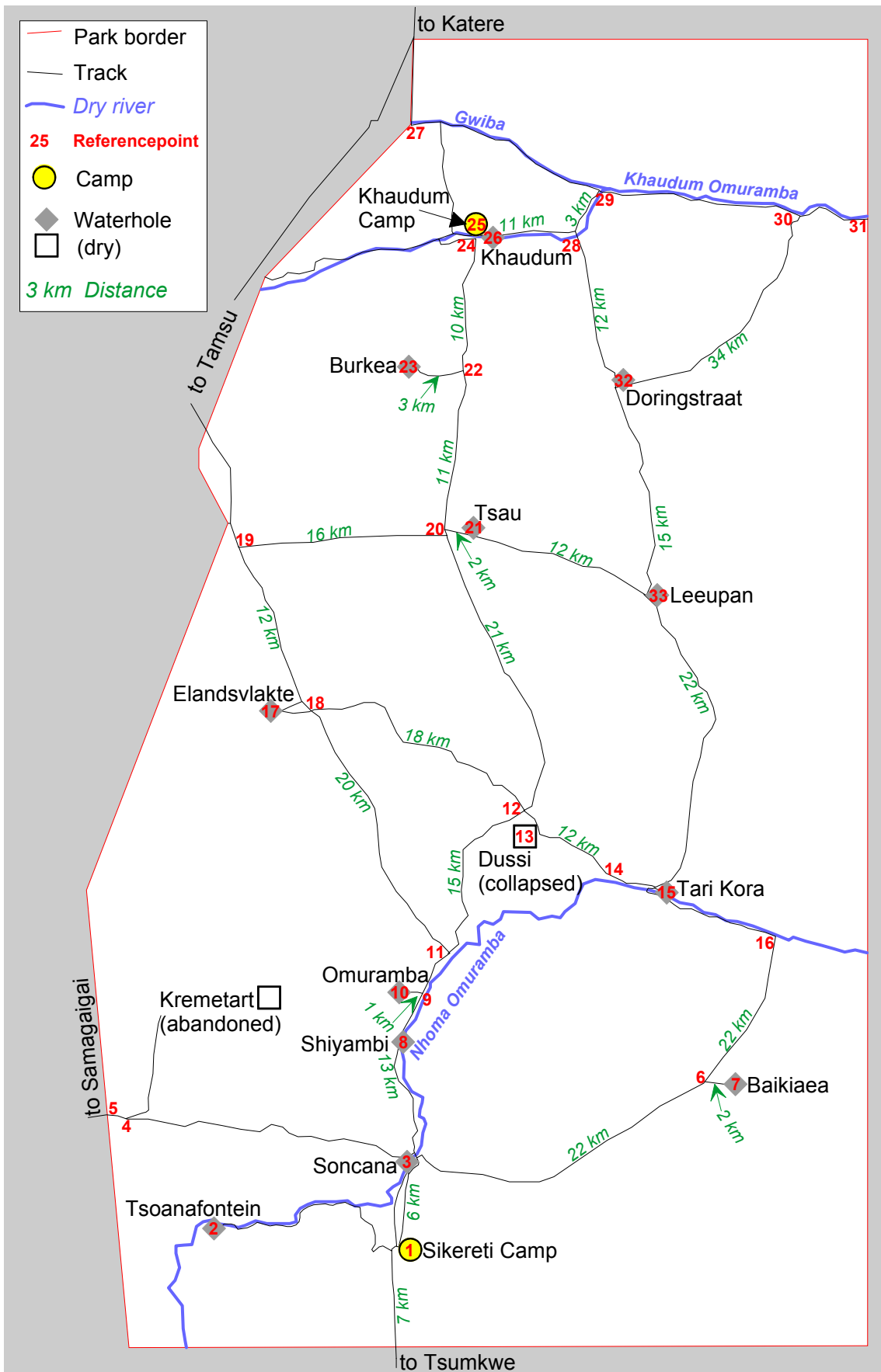
Leeupan - Doringstraat: Sandy sections lead through typical Wild Seringa savanna that is interrupted by a number of small pans.

Doringstraat - Khaudum Camp direct: The track runs through thick sand. Ponds and a slippery surface develop quickly after rains in the Omuramba Khaudum. The open woodland of Wild Seringa, Kiaat and False Mopane is only interrupted by the Omuramba Khaudum. Conspicuously tall reeds grow at the crossing.

Doringstraat - Khaudum Camp with detour (eastern track): Soft and hard sand alternate along this rarely used track. The part in the Omuramba is easy during the dry season but ponds and slippery surfaces develop after heavy rains. In addition, abundant antbear/warthog burrows pose a threat to the axes, especially if they are obscured by grass. The Wild Seringa savanna is rather variable in this part of the park as it alternates with small depressions covered by grass or mixed Acacia bushveld.

Gwiba Omuramba: The track along the Omuramba is easy during the dry season and it usually stays navigable after rains. The Omuramba is dominated by grass and reeds in the central part. Along the banks grows Acacia bush that develop gradually into woodlands of Silver Cluster-leaf and Wild Seringa.

Khaudum - Katere: Deep sand! The road B8 Rundu – Katere - Divundu/Bagani is tarred (distance Rundu - Katere 110 km, Katere - Divundu/Bagani 80km).



Map 1: Overview map of Khaudum National Park

Table 2: Reference coordinates for Map 1 (GPS coordinates from February 2005 using WGS datum)

No. in Map 1	Locality	Latitude	Longitude
1	Sikereti	S19°06.452	E20°42.316
2	Tsoanafontein lookout	S19°05.756	E20°35.490
3	Soncana lookout	S19°03.322	E20°42.922
4	Turnoff to Kremetart (dry)	S19°01.834	E20°32.138
5	Crossing park border - Samagaigai	S19°01.712	E20°31.350
6	Turnoff to Baikiaea	S19°00.545	E20°53.883
7	Baikiaea lookout	S19°00.618	E20°54.896
8	Shiyambi waterhole (recently drilled) Located ca. 4 km South of Omuramba waterhole within Omuramba Nhoma		
9	Turnoff to Omuramba	S18°57.444	E20°43.227
10	Omuramba waterhole	S18°57.385	E20°42.778
11	Turnoff to Elandsvlakte	S18°56.004	E20°44.262
12	Crossing near Dussi	S18°50.970	E20°46.921
13	Dussi (collapsed) waterhole	S18°51.169	E20°47.400
14	Little Fountain (small spring at a rocky outcrop)	S18.52.391	E20°49.268
15	Tari Kora lookout	S18°53.768	E20°52.249
16	Leaving Omuramba Nhoma towards Baikiaea	S18°55.392	E20°56.500
17	Elandsvlakte waterhole	S18°47.309	E20°37.953
18	Crossing near Elandsvlakte	S18°47.303	E20°39.042
19	Turnoff to Tsau (Tamsu road)	S18°41.468	E20°36.316
20	Turnoff to Tsau	S18°40.736	E20°44.073
21	Tsau lookout	S18°41.078	E20°45.341
22	Turnoff to Burkea	S18°35.160	E20°44.825
23	Burkea waterhole	S18°35.060	E20°42.880
24	Curve before Khaudum Omuramba	S18°30.677	E20°43.541
25	Khaudum Camp Office	S18°30.254	E20°44.395
26	Khaudum waterhole (recently drilled) Located ca. 2 km east of Khaudum Camp within Omuramba Khaudum		
27	Crossing Gwiba Omuramba on Khaudum-Katere track	S18°26.439	E20°44.004
28	Turnoff to Doringstraat	S18°30.253	E20°49.002
29	Turnoff to Omuramba Gwiba	S18°28.832	E20°49.982
30	Turnoff to Doringstraat	S18°29.692	E20°57.448
31	Border fence Botswana	S18°29.804	E20°59.925
32	Doringstraat waterhole	S18°35.787	E20°50.560
33	Leeupan Lookout	S18°43.238	E20°51.633

The Waterholes

Table 3: Meaning of the names of the waterholes in Khaudum National Park

Baikiaea	<i>Vegetation: Baikiaea plurijuga (Zambezi Teak)</i>
Burkea	<i>Vegetation: Burkea africana (Wild Seringa)</i>
Doringstraat	<i>Afrikaans: Thorny road</i>
Dussi (dry)	<i>San: Mud and dust bath</i>
Elandsvlakte	<i>Afrikaans: Eland plain</i>
Kremetart (dry)	<i>Afrikaans: Baobab</i>
Khaudum	<i>San/Kavango: Buffalo plain</i>
Leeupan	<i>Afrikaans: Lion pan</i>
Omuramba	<i>Herero: Dry river</i>
Shiyambi	Name of former Gciriku chief, who lived in the area
Soncana	<i>San: Camel Thorn</i>
Tari Kora	<i>San: not clear: translated with "no shade" or "no jackals"</i>
Tsau	<i>San: Silver Cluster-leaf (Terminalia sericea)</i>
Tsoanafontein	<i>Afrikaans: Spring on the way to Botswana</i>

The waterhole **Baikiaea** (solar pump) is situated in between two dunes that are both covered with Zambezi Teak. A lookout is set up south of the waterhole. Unfortunately the waterhole is quite densely surrounded by shrubs of Acacia and Commiphora, which limits wildlife viewing, but the beauty of the forest makes the place worth to visit.

The waterhole **Burkea** (solar pump) is situated in a natural pan surrounded by a Wild Seringa savanna. No lookout is available but a large Leadwood tree provides shade next to the pump. A very nice view over the pan and the Wild Seringa woodland can thus be enjoyed. Elephants are sometimes resting in the shade under the Wild Seringa trees on the other side of the pan and can be nicely observed from distance. Roan Antelopes are seen often in the vicinity of the waterhole.

The waterhole **Doringstraat** (solar pump) is next to a natural pan that is vegetated with Acacia and Combretum shrubs. The view is thus limited. But large trees of False Mopane, Kiaat and Wild Seringa are close and offer a rest in shade (no lookout point). The large trees show clear signs of repeated burning.

The waterhole **Elandsvlakte** (solar pump) is positioned in an intimate pan situation within open woodland of Wild Seringa with Kiaat and tall trees of Silver Cluster-leaf. A close-to-collapsing lookout tower is situated near the waterhole underneath a Leadwood tree. If you are using this tree to provide you with shade, you will only have a view to the solar pump as dense shrubs of Russet Bushwillows separate you from the waterhole! The view from the pump is much better but without shade.

Originally the waterhole in the **Khaudum** Omuramba (diesel pump) was positioned directly at the foot of the dune on which the campsite has been built. In 2006 the waterhole has been repositioned for ca. 2 km to the east, because large grey troublemakers have visited the campsite too often.

The very tall lookout tower near the office does not give insight into the doings near the waterhole, but gives a wonderful view over the flood plain and the southwards adjoining savanna.

A large Camel Thorn tree provides shade for the lookout at the waterhole **Leeupan** (solar pump). The vegetation is rather open and with some luck Lions can be observed during their siesta. During heavy rains Doringstraat gives you an impression of how quickly pans may fill by local surface run-off of rain water.

The waterhole **Omuramba** (solar pump) is situated in a tributary to the Omuramba Nhoma. Shepherd's Tree and Acacia are the dominant species. Both are heavily pruned by Elephants. The waterhole is not fitted with a lookout tower and shade is very limited. But chances to see Elephants are good.

The waterhole **Soncana** (diesel pump) lies in the Omuramba



Figure 6: Waterholes

- Top: Elephants at Burkea. The tree savanna of Wild Seringa, False Mopane and Kiaat is intersected by a grass pan here
- Middle: Doringstraat. Degradation is visible close to the waterhole. A large Leadwood tree stands close to the waterhole. The background is dominated by a Wild Seringa savanna.
- Bottom: Lookout tower under a large shady Camel Thorn tree at Tsoanafontein.

Nhoma. A large lookout tower is shaded by trees of Camel Thorn, Shepherd's Tree and Leadwood. The view into the waterhole and the surrounding is very good. The diesel pump is far enough away not to disturb. Chances for viewing Elephants and other game are good.

The large lookout tower at **Tari Kora** (solar pump) offers a good line of sight to the waterhole, which comprises here a naturally appearing pond and an elephant crib made of concrete. As the view from the lookout is open to all sides one should take the chance to observe the different vegetation communities. At the southern bank a heavily pruned Black Thorn thicket develops gradually into Zambezi Teak forest via shrubs of Silver Cluster-leaf. At the northern bank Acacia and Shepherd's Tree are slowly replaced by Silver Cluster-leaf and Sand Camwood. When driving north, the further development into woodland of Wild Seringa and Kiaat can be observed. Lions, Elephants, and Giraffes can be readily observed from Tari Kora while one is sheltered from the pachyderms with a steel rope construction.

The waterhole **Tsau** (solar pump) is situated at an elongated pan which resembles a weakly defined dry river. The lookout tower allows nice observations of the waterhole and its surroundings.

Tsoanafontein is a natural spring and the groundwater feeds a natural lake here thus also allowing for water-bird watching. The large lookout is fitted with a shade roof and additional shade provided by a large Camel Thorn tree invites for an extended stay. A nice view over the valley with a large meander is given. With luck elephants may be seen using their favoured scrubbing trees on the other side of the lake. In the dry season Tsoanafontein receives the largest elephant concentration in the park.

Two further small natural springs occur in the park. One is flowing out of a rocky outcrop between Dussi and Tari Kora and is often visited by Lions. The other spring is situated near the confluence of the Omiramba Khaudum and Gwiba and has been opened by Elephants.

Overnight

The Khaudum Park is equipped with two camps (Sikereti und Khaudum) that offer camping facilities and bungalows. But in January 2005 the facilities have been in such a poor condition that there was no cost for staying overnight. Nevertheless a confirmed reservation via Namibia Wildlife Resorts is recommended during the peak season (August – September) as space is limited. Hence neither camp is fenced wild visitors might occur anytime. Spotted Hyenas visit Sikereti camp at night regularly as they have been too often lucky with leftovers from tourist's braais. So you should not even think about sleeping in the open without a tent!

Not long ago, one could hear the fights for the best water between Elephants and Lions at Khaudum camp during the night. Mostly the Lions retreat into the dune, so into the camp, or a thirsty elephant checked which water pipe could be dugged out at the campsite. For this reason Khaudum water hole has been repositioned and night visits at the toilet have become more relaxed.

On your route to or from Khaudum you might find one of the following camps useful:

- Roy's Rest Camp at the B6 directly behind the turnoff to Tsumkwe (campsites, bungalows, bar, meals, swimming pool)
- Omatako Rest Camp ca. 10 km behind the veterinary fence along the gravel road to Tsumkwe (basic campsites, Bushmen activities)
- Tsumkwe Lodge in Tsumkwe (campsites, bungalows, bar, meals, swimming pool, organisation of Bushmen activities, reliable and well experienced Khaudum accompanies)
- Other camping facilities (no toilet or water) near several Bushmen villages of the Nyae-Nyae Conservancy (bookings via the conservancy office in Tsumkwe)
- Popa Falls Resort (Namibian Wildlife Resorts)
- Several lodges and camps along the Okavango (e.g. Ngepi)

Supply

The nearest more specific supplies are available in Grootfontein and Rundu. Petrol is not generally available in Tsumkwe although other guidebooks or web pages might say so. However, now there are seemingly serious plans to build a public filling station in Tsumkwe. So far you can purchase a limited amount of fuel at Tsumkwe Lodge by prior confirmed order and overnight stay there. General long-life supplies can be purchased from two supermarkets in Tsumkwe. Self Help Supermarket offers daily fresh baked bread and limited amounts of seasonal fruits and vegetables that are produced by Tsumkwe's enthusiastic gardener known as "Rasta". With some luck you can also buy frozen meat from Savanna II Supermarket. We recommend consuming it "well done" only.

The water in Tsumkwe (lodge and municipality), in Sikereti and in Khaudum is of good quality and we recommend that you drink plenty and always carry more than you think you will need. Note, that water supply in Sikereti and Khaudum is occasionally interrupted. Just contact the staff and they will soon provide you this essential supply.

Tsumkwe medical infrastructure is limited to a nurse, but a physician visits Tsumkwe every second week. The nearest available surgeon is in Mangetti Duin. Further medical services can be found in Grootfontein and Rundu. Remember that malaria is endemic in north-eastern Namibia.

Sikereti Camp has radio, Khaudum has both telephone and radio. The radios in both camps work only on bright days as they are powered with solar panels. Phone and radio are only available in emergencies. Since 2006 mobile phones work in Tsumkwe.

The Satellite Imagery

Figure 8 (see last page) provides a satellite image that was acquired in June 2000 by the remote sensing satellite Landsat TM 7. This opto-mechanic Scanner, that circles the earth on defined orbits, measures the reflection of light from the earth's surface in the visible and infrared wavelength. Channels 1, 2 and 3, corresponding to blue (450-520 nm), green (520-

600 nm) and red (630-690 nm) light respectively, are combined to give a true colour image. The image appears more bluish than we would see it from an aircraft as specific minerals cause a strong reflection in the range of channel one.

Hardrocks stand out clearly as dark colours in the southern part of the park. These quartzites and rare phyllites form flat ridges and follow a north-western direction that can be easily traced in the satellite image. These rocks were deposited as layers of sand and mud in an ocean and were metamorphosed under enhanced temperature and high pressure to quartzite and phyllite during the collision of two continents 600-535 million years before present. The rocks can be visited between Soncana and Dussi and in the Omuramba Nhoma east of Tari Kora.

Distinct, east-north-east trending features in the southern half of the park are fossil dunes. These fossil dunes are particularly prominent in the vicinity of the waterhole Baikiaea and were formed by strong easterly winds in a dry climate between 20 000 to 40 000 years before present. The subsequent wetter climate allowed vegetation to cover and conserve this landform.

The Omuramba Nhoma winds as a thin line through the southern part of the satellite image. On its way from the south-western park border towards Botswana it flows firstly on shallow hard soils, cuts through hardrock ridges and then follows the easterly trend of the dunes. Omuramba Khaudum is prominent as a broader structure in the satellite image. Its flat, wide valley runs in the loose sandy plain of northern Khaudum Park. The gradient of the river is in some parts so low that meanders were formed e.g. east of Khaudum Camp.

A broad white area is very prominent in the central part of the park, crossing it from east to west. This very strong reflection in the entire range of the visible light is caused by very light sandy soil, which is only sparsely covered by vegetation, - a result from bush burning. The path of the burned area indicates that the fire was blown in from Botswana. Omuramba Nhoma has acted as a fire break and the fire managed only to cross the smaller tributary further to the west. Stronger burning occurred in the vicinity southeast of the waterhole Elandsvlakte before the fire left the park in a north-western direction.

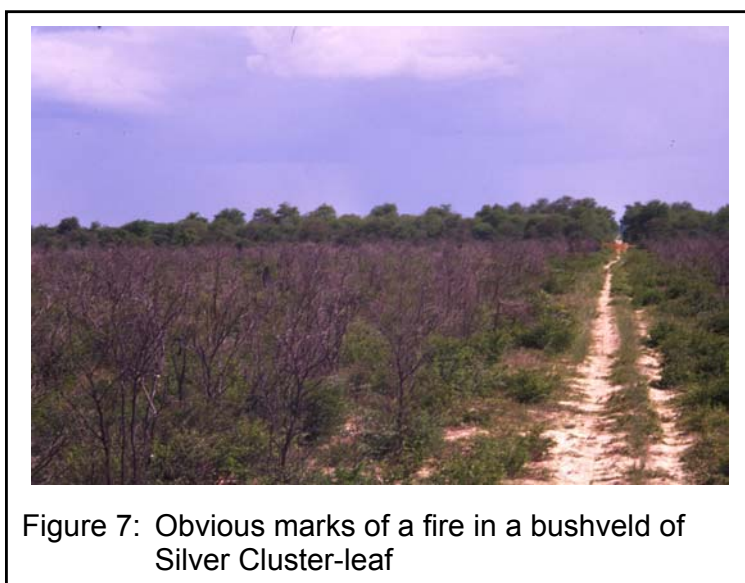


Figure 7: Obvious marks of a fire in a bushveld of Silver Cluster-leaf

Another area that has experienced strong burning not long before the satellite image was taken is visible north of Omuramba Khaudum at the eastern border. But there the fire did not run severely into the park as the threefold national border fence and driving tracks on both sides acted as fire break during less intense wind. Fires are causing major problems to the park. They are mostly lit in Botswana at the end of the dry season and reach the park with

medium to strong winds. Burning occurs 2 or 3 times in 4 years in large parts of the northern park and not more than once every 4 years in the southern park.

Large calcrete pans show up in the satellite image as white areas, if they are not covered by vegetation. Smaller pans are mostly not very obvious, as the resolution of the satellite scanner is 30 x 30 m only. To become obvious for the user a minimum amount of pixels have to fall in the same class which is often not given for the rather small non-vegetated parts of the pans in the park. Pans that are covered by grass or Acacia appear in green and brown colours, but they are easier to identify by their shape.

Figure 8 (last page): True colour composite of Khaudum National Park (Landsat TM 7, No. 176-073, June 2000). Numbers refer to 1) hardrock ridges supporting *Terminalia prunioides* woods here, 2) Omuramba Nhoma cuts through hardrock ridges, 3) dunes with deep sand alternate with shallow soils in interdunes 4) relictic dunes at the western park border, 5) Omuramba Nhoma, 6) Omuramba Nhoma becomes very narrow and cuts through hardrocks near the eastern border, 7) burnt area, 7a) the fire has been blown into the park from Botswana, 7b) areas of shallow soils appear very prominent due to burning, 8) Omuramba Khaudum, 9) meander in Omuramba Khaudum near Khaudum Camp, 10) grass pan, 11) sand plain supporting Wild *Seringa* savanna, and 12) calcrete pan west of the Baobabs near Kremetart waterhole.

Species Lists

List of common mammals in Khaudum National Park

English	Afrikaans	Scientific name
African Wild Dog	Wildehond	<i>Lycaon pictus</i>
Antbear	Aardvark	<i>Orycteropus afer</i>
Bat-eared Fox	Bakoervos	<i>Otocyon megalotis</i>
Black-backed Jackal	Rooijakkals	<i>Canis mesomelas</i>
Blue Wildebeest	Blouwildebees	<i>Connochaetes taurinus</i>
Common Duiker	Gewone duiker	<i>Sylvicapra grimmia</i>
Eland	Eland	<i>Taurotragus oryx</i>
Elephant	Olifant	<i>Loxodonta africana</i>
Gemsbok	Gemsbok	<i>Oryx gazelle</i>
Giraffe	Kameelperd	<i>Giraffa camelopardalis</i>
Kudu	Koedoe	<i>Tragelaphus strepsiceros</i>
Leopard	Luiperd	<i>Panthera pardus</i>
Lion	Leeu	<i>Panthera leo</i>
Red Hartebeest	Rooihartbees	<i>Alcelaphus buselaphus</i>
Roan Antelope	Bastergemsbok	<i>Hippotragus equinus</i>
Spotted Hyena	Gevlekte hyena	<i>Crocuta crocuta</i>
Steenbok	Steenbok	<i>Raphicerus campestris</i>
Tsessebe	Tsessebe	<i>Damaliscus lunatus</i>
Vervet Monkey	Blouaap	<i>Ceropithecus aethiops</i>
Warthog	Vlakvark	<i>Phacochoerus aethopicus</i>

List of common trees in Khaudum National Park

Scientific name	English	Afrikaans
<i>Acacic erioloba</i>	Camel Thorn	Kameeldoring
<i>Acacia fleckii</i>	Blade Thorn	Bladdoring
<i>Acacia hebeclada</i>	Candel-pod Acacia	Trassiedoring
<i>Acacia luederitzii</i>	Kalahari Sand Acacia	Kalahari-doring
<i>Acacia mellifera</i>	Black Thorn	Swarthaak
<i>Acacia sieberiana</i>	Paperbark Acacia	Papierbasdoring
<i>Acacia tortilis</i>	Umbrella Thorn	Haak-en-steek
<i>Adansonia digitata</i>	Baobab	Kremetart
<i>Albizia anthelemintica</i>	Worm-cure Albizia	Wurmbasvals doring
<i>Albizia harveyi</i>	Sickle-leaved Albizia	Bleekblaarboom
<i>Baikiaea plurijuga</i>	Zambezi Teak	Zambezi-kiaat
<i>Baphia massaiensis</i>	Sand Camwood	Sandkambout
<i>Bauhinia petersiana</i>	Kalahari Bauhinia, Coffee Bauhinia	Kalahari-beeskou
<i>Boscia albitrunca</i>	Shepherd's Tree	Witgat/Matopie
<i>Burkea africana</i>	Wild Seringa	Wildesering
<i>Catophractes alexandrii</i>	Trumpet Thorn	Trompetdoring
<i>Combretum apiculatum</i>	Red Bushwillow	Rooiboswilg
<i>Combretum celastroides</i>	Trailing Bushwillow	Rankboswilg

List of common trees continued

Scientific name	English	Afrikaans
<i>Combretum collinum</i>	Weeping Bushwillow	Treurboswilg
<i>Combretum engleri</i>	Small Sand Bushwillow	Kleinsandboswilg
<i>Combretum hereroense</i>	Russet Bushwillow	Kierieklapper
<i>Combretum imberbe</i>	Leadwood	Hardekool
<i>Combretum psidioides</i>	Peeling Bushwillow	Skilferboswilg
<i>Combretum zeyheri</i>	Large-fruit Bushwillow	Raasblaar
<i>Commiphora angolensis</i>	Sand Corkwood	Sandkanniedood
<i>Commiphora africana</i>	Poison-grub Corkwood	Gifkanniedood
<i>Commiphora glandulosa</i>	Tall Firethorn Corkwood	Grootdoringkanniedood
<i>Commiphora pyracanthoides</i>	Firethorn Corkwood	Doringkanniedood
<i>Croton gratissimus</i>	Lavender Croton	Laventelkoorsbessie
<i>Dichrostachys cinerea</i>	Sickle Bush	Sekelbos
<i>Diospyros lycioides</i>	Blue Bush	Bloubos
<i>Diplorhynchus condylocarpon</i>	Horn-pod Tree	Horingpeultjieboom
<i>Grewia bicolor</i>	White-leaved Raisin	Witblaarosyntjie
<i>Grewia flava</i>	Velvet Raisin	Brandewynbos
<i>Grewia flavescens</i>	Sandpaper Raisin	Skurwerosyntjie
<i>Grewia retinervis</i>	False Sandpaper Raisin	Kalahari-rosyntjie
<i>Guibourtia coleosperma</i>	Large False Mopane	Grootvalsmopanie
<i>Gymnosporia senegalensis</i>	Confetti Spikethorn	Rooipendoring
<i>Hyphaene petersiana</i>	Northern Lala Palm/Real Fan Palm	Noordelike Lalapalm
<i>Mundulea sericea</i>	Cork Bush	Kurkbos
<i>Ochna pulchra</i>	Peeling-bark Ochna	Lekkerbreek
<i>Ozoroa paniculosa</i>	Resin Tree	Harpuisboom
<i>Ozoroa reticulata</i>	Tarberry Resin Tree	Teerbessieharpuisboom
<i>Peltophorum africanum</i>	African Wattle	Huilboom
<i>Philenoptera nelsii</i> (<i>Lonchocarpus nelsii</i>)	Kalahari Apple-leaf	Kalahari-appelblaar
<i>Pterocarpus angolensis</i>	Kiaat	Kiaat
<i>Rhigozum brevispinosum</i>	Yellow Rhigozum	Kortdoringgranaat
<i>Rhus tenuinervis</i>	Rolled-leaf Currant	Krulblaartaaibos
<i>Schinziophyton rautanenii</i>	Manketti Tree	Mankettiboom
<i>Strychnos pungens</i>	Spine-leafed Monkey Orange	Stekelblaarklapper
<i>Swartzia madagascariensis</i>	Snake Bean	Slangboon
<i>Terminalia prunioides</i>	Purple-pod Cluster-leaf	Sterkbos
<i>Terminalia sericea</i>	Silver Cluster-leaf	Vaalboom/Geelhout
<i>Ximenia Americana</i>	Blue Sourplum	Blousuurpruim
<i>Ziziphus mucronata</i>	Buffalo Thorn	Blinkblaar-wag'n-bietjie

List of common grasses in Khaudum National Park

Scientific name	English	Afrikaans
<i>Aristida stipitata</i>	Long-awned Grass	Langnaaldsteekgras
<i>Brachiaria brizantha</i>	Common Signal Grass	Broodsinjaalgras
<i>Cenchrus ciliaris</i>	Foxtail Buffalo Grass	Bloubuffelsgras
<i>Chloris virgata</i>	Feather-top Chloris	Klossiegras
<i>Cymbopogon excavatus</i>	Broad-leaved Turpentine Grass	Breeblaarterpentynggrass
<i>Cynodon dactylon</i>	Couch Grass	Kweekgras
<i>Dactyloctenium giganteum</i>	Giant Crowfoot	Reusehoenderspoor
<i>Digitaria eriantha</i>	Common Finger Grass	Wolvingergas

List of common grasses continued

Scientific name	English	Afrikaans
<i>Enneapogon cenchroides</i>	Nine-awned Grass	Eenjarige negenaaldgras
<i>Eragrostis echinocloidea</i>	Tick Grass	Krummelgras
<i>Eragrostis rigidor</i>	Curly Leaf	Krulblaarpluimgras
<i>Eragrostis rotifer</i>	Pearly Love Grass	Vleipluimgras
<i>Eragrostis trichophora</i>	Hairy Love Grass	Behaarde pluimgras
<i>Hyperthelia dissoluta</i>	Yellow Thatching Grass	Geeldekgras
<i>Panicum coloratum</i>	Small Buffalo Grass	Bont-Panicum
<i>Panicum kalahareense</i>	Kalahari Buffalo Grass	Kalaharibuffelsgras
<i>Panicum maximum</i>	Guinea Grass	Groot-Panicum
<i>Phragmites australis</i>	Common Reed	
<i>Schmidtia pappophoroides</i>	Sand Quick	Kalaharisandkweek
<i>Setaria sphacelata</i>	Common Bristle Grass	Klitsgras
<i>Sorghum bicolor</i>	Common Wild Sorghum	Gewone wildesorghum
<i>Sporobolus festivus</i>	Red Dropseed	Rooi Fynsaadgras
<i>Sporobolus fimbriatus</i>	Dropseed Grass	Fynsaadgras
<i>Themeda triandra</i>	Red Grass	Rooigras
<i>Tricholaena monachne</i>	Blue-seed Grass	Blousaadgras

Further Reading

Gemsbok Bean & Kalahari Truffle written by Arno Leffers. This book gives a very nice insight into the traditional plant use by the Jul'hoansi in north-eastern Namibia. Published by Gamsberg Macmillan, Windhoek. ISBN 99916-0-491-X

Sand and Water by John Mendelsohn and C.S. Roberts. The book presents an illustrated profile of the Kavango Region. Published by Struik Publishers, Cape Town. ISBN 1-86872-884-6

The Communal Lands in Eastern Namibia by John Mendelsohn and Selma el Obeid. This regional profile can be downloaded from RAISON's (Research and Information Service of Namibia) homepage: www.raison.com.na. ISBN 99916-780-2-6

Kavango, Volume XL/XLI (1985/86 – 86/87) of the Journal of the Namibia Scientific Society. Though this volume is a bit out of date, one finds much information about the Kavango Region, its nature and people. You can purchase this volume directly at the library of the Namibia Scientific Society, Robert Mugabe Avenue 110, Windhoek

Khaudum Map: A water - and sand proof version showing tracks and waterholes including GPS coordinates. The map is available at Tsumkwe Lodge



to Katere

to Tamsu

7a

Khanatum

8

9

11

Burkea

to Tamsu

Doringstraat

10

7

Tsau

Leeupan

Elandsvlakte

7

Dussi

7b

4

4

Tari Kora

2

6

12

Kremetart

Omuramba

1

3

Baiklaea

to Samagelga

1

Soncana

5

Tsoanafontein

Sikereti

to Tsumkwe

1