



Tourism in the Kruger National Park: Past Development, Present Determinants and Future Constraints

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Abstract

Proclaimed on 26 March 1898, the Sabi Game Reserve was the largest game reserve established in South Africa at the time. In 1902, at the end of the Anglo-Boer War, the reserve was re-established by the British caretaker government. The game reserve later faced considerable opposition, and the idea of a national park was gradually developed. The enlarged game reserve was finally proclaimed by the South African Parliament in 1926 and became the country's first national park. The first visitor overnight accommodation was constructed in 1928. A rapid increase in visitors soon placed pressures on visitor facilities. Over the intervening 90 years the Kruger National Park has become the most visited national park in Africa where wildlife viewing is the core attraction. Visitor numbers have increased from 27 in 1927 to 1.8 million in 2016/2017. At a 6% rate of increase, visitors will double to 3.65 million by 2029. Since 1961 the number of accommodation nodes within the park has increased from 14 to 27, totalling 4179 beds and 1896 visitors in campsites. A total of 1047 beds are also available in 24 privately-owned concession lodges. The park has an 883-kilometre network of tarred roads and 1679 kilometres of gravel roads. Of the four management regions, 47.7% of visitor accommodation and 32.9% of visitor roads are concentrated in the southern region, which accounts for 21.9% of the park's area. As the southern region is closest to the cities of Johannesburg and Pretoria, the research reveals that it attracts more visitors and the rest camps in this region exhibit the highest occupancy rates. However, out of 308 social media respondents, 90.9% believe that the southern region is currently overcrowded. Proposals for the future include better management of OSV visitors, separate branding for the four regions and the establishment of peripheral accommodation.

Keywords: Kruger National Park, ecotourism, tourist accommodation, visitor increases, constraints

Introduction – The creation of the Kruger National Park

The Kruger National Park is South Africa's oldest, largest and most successful national park in terms of both its local and international profile, and its ability to generate income from tourism (SANParks, 2018a, 29). The Sabi Game Reserve, the 4600-km² core of the current national park, was originally proclaimed by President Paul Kruger of the Zuid-Afrikaansche Republiek (ZAR) on 26 March 1898. (Dennis & Brett, 2000, 3). The Sabi Game Reserve was not the first of the game reserves established by the ZAR, but it was by far the largest (Carruthers, 1995, 19, 27). Within 18 months, the geographic region which is now known as the Republic of South Africa was plunged into internecine conflict between English and Afrikaners, and which later embroiled all the people of South Africa in a lengthy war. The conflict finally ended on 31 May 1902, although guerrilla activity continued for a number of years after the peace treaty (SA History Online). The war cost the British government more than £200 million (equivalent to £57.4 billion in 2018 values at an annual inflation rate of 5%). Much of South Africa lay in ruin, as agriculture had collapsed in many regions as a result of the farm-burning policy, and the internment of 230,000 members of the civilian population in concentration camps (SA History Online).

Lord Alfred Milner was appointed Administrator of the Transvaal and the Orange River Colony from January 1901 to June 1902. His caretaker government in Pretoria was anxious to re-establish government institutions and three of the ZAR's game reserves were re-established (Pringle, 1982,



80; Carruthers, 1995, 32, 61). In Britain the ruling class had had a long-established tradition of preserving certain wild animal species for the exclusive use of the ruling elite, so Milner's decisions in no ways represented a new or radical approach to wildlife preservation (Carruthers, 1995, 67; Dennis & Brett, 2000, 4; Brett, 2010, 4)

The caretaker government in Pretoria appointed Major James Stevenson-Hamilton as warden of the re-established Sabi Game Reserve in July 1902. After hiring four assistants he trekked into the Lowveld¹ and entered the reserve on 6 August 1902. Travelling in an easterly direction from Pretoriuskop, Stevenson-Hamilton was disappointed by the scarcity of wildlife he encountered, which was a direct result of the recent Anglo-Boer War (Stevenson-Hamilton, 1937, 46). After spending four months at Crocodile Bridge, where the Selati Railway crossed the Crocodile River, he relocated his headquarters in November 1902 to a blockhouse at Sabie Bridge, that had accommodated soldiers during the Anglo-Boer War (Stevenson-Hamilton, 1937, 38, 49, 71).

Sabie Bridge was so named as it was the point where a wide steel bridge carrying the Selati Railway crossed the Sabie River. With the military discipline he had acquired at Sandhurst, and whilst serving as an officer in the Sixth Inniskilling Dragoons, Stevenson-Hamilton devoted his energies to his new career (Carruthers, 1995, 36). Initially, he regarded this junior civil service job as a temporary assignment, but within one year he had convinced the British administrators in Pretoria of the need to triple the size of the Sabi Game Reserve (Carruthers, 1995, 37). In the same year, the Singwitsi Game Reserve was proclaimed and encompassed 9,000 km² of land between the Letaba and Luvuvhu rivers (Stevenson-Hamilton, 1937, 97). Stevenson-Hamilton had not been responsible for the proclamation of the Singwitsi Game Reserve, but took control of the vast terrain. The annual budget for the two discontinuous reserves, which covered 22,000 km², was £4,000 and strict control had to be exercised over both staff and finances (Carruthers, 1995, 39). Because of his determination and authoritarian managerial style, which resulted at times in the forced relocation of some of the reserve's resident black homesteads when they were suspected of poaching, Stevenson-Hamilton was soon nick-named 'Skukuza' (the one who sweeps clean) by the local people (Stevenson-Hamilton, 1937, 48, 58; Carruthers, 1997, 128). In 1911 the warden reported that there were 600 taxable men and 3500 women and children in the Sabi Game Reserve, and a smaller population in the Singwitsi Game Reserve (Brett, 2010, 56, Carruthers, 2001, 93).

As the British wildlife protectionist tradition did not view the preservation of wildlife in the same way as the American experiment, which, beginning in 1872, had begun declaring certain landscapes as the property of the entire nation, early game rangers in South Africa were *de facto* deer keepers. (Carruthers, 1995, 53; Carruthers, 1997, 125). There was little or no evidence of any conservation ethic in the general public, and the accepted view was that the game reserves would eventually be re-opened for trophy hunting once wildlife populations had recovered (Stevenson-Hamilton, 1937, 115). English sport hunters dominated the "fauna preservation societies" of the day, which were often little more than hunting clubs, and no clear distinction existed between sport hunting and wildlife preservation (Pringle, 1982, 60, 78; Carruthers, 1995, 14, 18, 24, 31, 52).

As herbivore populations in the two game reserve began to recover, so predator numbers increased and the "keepers of the royal deer" were soon faced with opposition from farmers on the boundary of the Sabi Game Reserve (Stokes, 1941, 22; Pringle, 1982, 86; Carruthers, 2001, 87). The Transvaal Game Protection Association, which was formed in 1902, included sport hunters and influential landowners. Influential members viewed the Sabi Game Reserve as a refuge for predators (Stevenson-Hamilton, 1937, 201; Pringle, 1982, 84; Carruthers, 1995, 18, 31). One member called for the, "abolition of the Sabi Game Reserve and the subsequent extermination of all the game in it" (Stevenson-Hamilton, 1937, 262). Another vocal member from the Lydenburg branch, Frederick

¹ The low country lying east of the Drakensberg Mountains and extending as far as the Mozambique border. Altitude ranges from 120 metres to 750 metres and this region has a reputation for supporting an abundance of wildlife. The prevalence of malaria helped to limit development until the end of the 19th century.



Vaughan-Kirby, called the Sabi Game Reserve, “a Government lion-breeding concern, and not a protection for game” (Carruthers, 1995, 42; Pringle, 1982, 93).

As Pringle (1982, 86), summed up this period in the eventual proclamation of the Kruger National Park, “the game reserve may have been intended for the benefit of future generations, but the present generation was not allowed in. There was no accommodation in the Reserve. Nor roads.”

Rangers responded to increased opposition from neighbouring farmers and other influential lobby groups by shooting many predators, even birds of prey, venomous snakes and even baboons, and up until 1927 a total of 1272 lions, 660 leopards, 269 cheetahs, 521 hyaenas and 1142 wild dogs were killed (Stevenson-Hamilton, 1937, 73; Smuts, 1982, 174).

Stevenson-Hamilton was well acquainted with developments in the global conservation movement and knew of the success of the American national parks. He wrote, “I had incidentally heard a great deal about the American national parks and of their success as a public attraction. Would it conceivably be possible to wean the South African public from its present attitude towards the wild animals of its own country, which was that of regarding them either as a convenient source of exploitation or as an incubus hindering the progress of civilization?” (Stevenson-Hamilton, 1937, 115).

In a major study of the environmental history of the British empire, MacKenzie (1988) argues, “to a large extent the very different conditions of Africa...were all overridden in favour of a concept which seemed to represent a North American success story, an example of what conscience could do to redress the destructiveness of America’s nineteenth-century frontier and make her flora and fauna available to a population increasingly discovering that it had the affluence and the mobility to develop an interest. The American precedent received a great deal of attention from the proponents of African national parks” (261, 262).

At the time the two game reserves were administered by the Transvaal Provincial Administration, and in 1914 General Jan Smuts, Minister of Finance and Defence in the Union Government supported the proposal that at least part of the reserve should become a national park, in line with trends in the United States of America (Carruthers, 1995, 55).

The 1903 proclamation, which had extended the boundary of the Sabi Game Reserve north of the Sabie River, incorporated many privately-owned farms, while the Singwitsi Game Reserve to the north encompassed the land between the Letaba and Luvuvhu rivers (Carruthers, 1995, 34, 38). State land between the Olifants and Letaba rivers, which was inhabited by black communities, was later added, but the inclusion of the central region was the most difficult part of the negotiations which resulted in the proclamation of the Kruger National Park. Much of the land was owned by white farmers and a speculative land company, although conditions were not conducive at the time for settled agriculture (Stevenson-Hamilton, 1937, 210; Stokes, 1941, 21; Bulpin, 1974, 16). Government had to first acquire 33 privately-owned and 49 company-owned farms, which were mostly the property of the Transvaal Consolidated Land Company (Dennis & Brett, 2000, 14; Carruthers, 2001, 155, 156). The irregular western boundary which resulted was therefore decided mainly by limiting the number of farms the government needed to purchase, as opposed to any ecological consideration (Stevenson-Hamilton, 1937, 214; Pringle, 1982, 96). After the farms had been purchased, or exchanged for land to the west, the Kruger National Park was proclaimed by the South African Parliament on 31 May 1926 (Stevenson-Hamilton, 1937, 214).

Development of early tourism in the vicinity of Pretoriuskop

The following year only three cars visited the new national park and revenue amounted to £3 (Dennis & Brett, 2000, 5). The Pretoriuskop area was the first portion of the Kruger National Park to be opened to visitors, and the network of loop roads around the camp recalls the time when it offered



some of the best game-viewing in the entire park (Bulpin, 1974 (2), 3; Ewart-Smith, 2005, 185) (Figure 1). When Stevenson-Hamilton first visited the area in 1902 he wrote, "Pretoriuskop, later to become so covered with wildebeest that they looked like mobs of cattle scattered everywhere, then held but a few reedbuck and duiker" (Stevenson-Hamilton, 1937, 58).

From 1913 to 1923, as many as 8,800 sheep, belonging to nine farmers, were herded into the Sabi Game Reserve from the beginning of May to the end of September (Pringle, 1982, 90). The sheep farmers burnt the veld around Pretoriuskop to create short, green grazing for their flocks of sheep (Pienaar, 1972, 3). The underlying geology consists of the igneous rock, granite, which produces a sandy, infertile soil requiring regular fire to ensure that grasses do not become tall and unpalatable. The relatively high rainfall, and the absence of frost, encourages grass growth even during winter (Gertenbach, 1983, 11), but the underlying sandy soil results in the presence of sour grass species, especially on the mid- and upper- slopes of the landscape (Gertenbach, 1983, 13). The presence of nutritious grazing in the Pretoriuskop area was therefore largely dependent on regular veld fires.

The veld burning regime practised by the farmers was later continued by Stevenson-Hamilton, even after the sheep farmers were no longer permitted, but veld experts warned that certain sour grass species would be stimulated by fires implemented at too regular an interval (Pienaar, 1972, 5). In later years, all veld fires were banned by Colonel J.A.B. Sandenbergh, a South African Air Force officer who succeeded Stevenson-Hamilton in 1946. The annual fires had held the vegetation in a sub-climax condition and, in the absence of fire, the silver-leaf trees (*Terminalia sericea*), which is not a popular browse species, soon grew into a tall, dense woodland. The Pretoriuskop area soon lost its reputation of offering prime game-viewing (Stokes, 1941, 31; Braack, 1983, 46; van Wyk, 1984, 181; Pienaar, 1972, 9; Paynter, 1986, 66, 84). Pienaar (1972, 3) stated, "that there is at present less game to be found in the Pretoriuskop area than in the era before 1947 cannot be disputed." This perception persists even to the present time, and Pretoriuskop has the lowest unit occupancy rate for any camp in the southern half of the park.

Development of the early rest camps in the Kruger National Park

Initially, visitor access to the Kruger National Park was cumbersome, and only day visits were permitted as there were no overnight visitor facilities. The austere budget of £10,000 that Stevenson-Hamilton had been given in 1927 to manage the Kruger National Park, left little surplus to construct any visitor facilities, although government did provide a grant for road construction (Stevenson-Hamilton, 1937, 223, 224). Day visitors had to obtain a permit from either Pretoria, White River, Sabie Bridge (Skukuza) or the Pretoriuskop game ranger post at Mthimba. The arrangement was cumbersome and visitors often passed ranger Harry Wolhuter's house at Mthimba (9 kilometres west of Numbi Gate) without first obtaining a permit, and an agent was later employed to issue permits (Joubert, 1990, 2).

The first three "rest huts" were constructed in 1928 at Pretoriuskop, Sabie Bridge and Satara, and in 1929 a further 12 rondavels (circular huts) were constructed at Sabie Bridge and two at Satara (Joubert, 1990, 2). In 1929 visitors increased to 2500, from the initial 27 only two years previously (SANParks, 2017). The early rest huts were constructed according to a design by the American mining engineer, Paul Selby, and made use of local natural resources such as thatching grass and



Figure 1: The loop roads near Pretoriuskop, such as the loop around Manung, are a relic from the early days when this region offered some of the best game-viewing in the Kruger National Park Source: Author's own



Figure 2: Built in 1930, a surviving example of an early rondavel in Pretoriuskop Camp. These structures were known as “Selby huts” and did not include windows because of the danger posed at night by predators such as lions and leopards Source: Author's own



timber for roof struts (Figure 2). The six extant huts at Balule are examples of these early “Selby huts” (Figure 7). The Selby huts did not contain any windows, as the rest camps were not fenced, and a round hole in the top half of the door allowed visitors to ascertain if any dangerous predators were in the vicinity before opening the door. As there was only a small gap between the wall and the roof, the interior was dark and the huts were very hot during summer (Joubert, 1990, 3).

Construction of the Olifants Poort (Gorge) camp commenced in 1929, and in the following year two huts were constructed at Sabie Bridge (Skukuza), four at Malelane, four at Pretoriuskop (Figure 2), 15 in Satara, six at Olifants (Balule) (Figure 7), one at Olifants Poort (Gorge) and 12 at Letaba (Figure 5, 6). At Lower Sabie, the house that had been used by ranger, Tom Duke, was converted into visitor accommodation (Joubert, 1990, 3). By 1930, within four years of the park being first opened to the public, a total of 63 thatched huts had been completed to accommodate overnight visitors. As rangers had limited funds at their disposal, they used local resources such as leadwood poles (*Combretum imberbe*) and thatching grass collected from the adjacent veld to construct these units (van Wyk, 1984, 173). The design of visitor accommodation mimicked Swazi and Shangaan architecture, and national parks in South Africa soon developed their own unique architectural style which has persisted, with very few exceptions, to the present day (refer to Figures 16 and 17).

After several guests contracted malaria, from 1930 the park was closed from the end of October until the end of May each year (Bulpin, 1974 (2), 3). By 1933, small rest camps had been established at Pretoriuskop, Sabie Bridge (Skukuza), Malelane, Crocodile Bridge, Rabelais, Satara, Olifants Poort (Gorge), Olifants (Balule), Letaba (Figure 5, 6) and Malopeni. Shingwedzi was opened in 1934, and the Lower Sabie units were completed in 1936 (Joubert, 1990, 4). Within a decade of the first visitors entering the park, there were therefore 12 rest camps available for visitors, of which only Rabelais, Gorge and Malopeni were later abandoned. The nine remaining rest camps have been developed and enlarged over the years and form the foundation of the Kruger National Park’s current visitor infrastructure (Maps 1 - 3).

The further development of visitor accommodation in the Kruger National Park

The initial 12 small rest camps were connected by roads constructed by staff which followed the straightest routes between ranger posts, and there were initially relatively few game-viewing loop roads. However, by the end of 1929 a total of 617 km of roads had been constructed (Joubert, 1990, 12) and by 1948 it was possible to travel from Malelane to Sabie Bridge (Skukuza), and as far as Satara, Olifants (Balule), Letaba, Shingwedzi, Punda Maria and ending at Pafuri on the far northern border (Map 2).

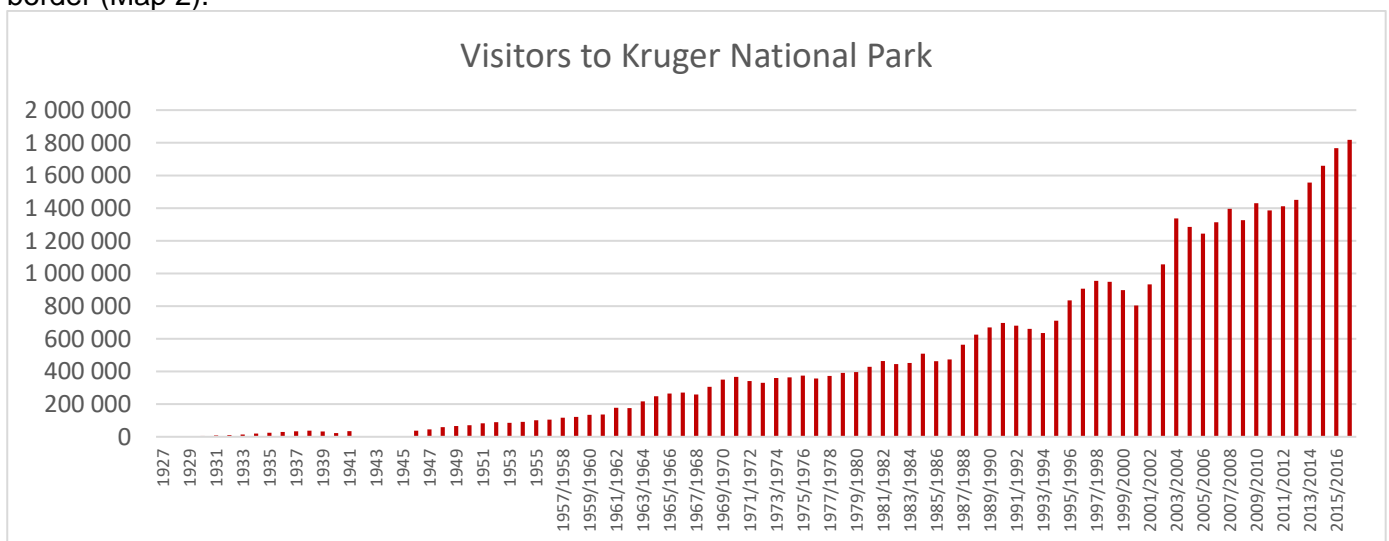


Figure 3: Growth in visitor numbers since 1927



Figure 4: A display at Tshokwane Picnic Site recalling the early days of tourism in the Kruger National Park
Source: Author's own



Figure 5: In 1954 visitors to Letaba Camp had to be accommodated in tents due to a lack of adequate overnight accommodation
Source: SANParks archives



Figure 6: Letaba Camp in 1954 showing the river-facing huts and the old hot-water boilers which used to be a feature of rest camps and picnic sites in the Kruger National Park Source: SANParks archives



Figure 7: The 18-bed Balule Camp consists of “Selby huts” and is located at the site where a pontoon, built by Colonel Deneys Reitz, transported visitors across the Olifants River from 1929 to 1937 and is one of the oldest rest camps in the Kruger National Park Source: Author’s own



There are currently 27 separate accommodation nodes in the Kruger National Park consisting of 12 large rest camps, two small rest camps, five bushveld camps, two bush lodges, two camping camps, two overnight hides, a former ranger's house and one tented camp (Table 2). In addition, there are 24 concession lodges in the park, including the contractual areas, and 10 wilderness trail camps (Table 2).

In the 86 years for which detailed visitor statistics are available, visitor numbers have exhibited a sustained increase. In only 20 years of the total period were declines on the previous year's visitor figures recorded. These declines often coincided with political unrest or global economic recession (SANParks, 2017). Visitors to the Kruger National Park doubled between 1934 and 1947, between 1947 and 1954, between 1954 and 1963 and again from 1963 to 1973. Visitors increased to 50,000 in 1948 and to 100,000 by 1955.

The park's staff often could not keep track with the increase in visitors and innovative solutions, such as erecting rows of tents, had to be found (Figure 5). In 1963 a total of 200,000 visitors were recorded and in 1984 visitors totalled 500,000. In 2002 visitors exceeded one million for the first time. Taken over the 90 years from when the first visitors entered the park, visitor numbers have grown by 67,323 fold to the latest figure of 1,817,724 for 2016/2017 (Figure 3).

Methodology

The latest visitor statistics supplied by SANParks were quantified, analysed and expressed spatially. If the statistics are analysed in detail, they reveal regional differences between both the distribution of visitor roads and accommodation amongst the four management regions of the Kruger National Park (Map 1, Table 2).

Spearman's correlation was used to assess the relationship between occupation rate and the size of a rest camp. The outcome variable was the occupation rate of Kruger National Park camps and the explanatory variable was the size of the camp. The null hypothesis is that there is no relationship between the occupancy rate of camps and the size of each camp. The alternative hypothesis is that there is a positive correlation between these two data. The scatter plot reveals that there is a weak positive relationship between occupancy rate and the number of beds ($\rho = 0.16$, $p < 0.444$). However, as a camp increased in size, it is suggested that this positive relationship would eventually decrease as there would be customer resistance to exceptionally large camps. But the findings that large camps have a higher occupancy rate are unexpected.

Regional distribution of visitor roads and accommodation

The current total number of visitor beds available is 4179 for 27 accommodation nodes, and the total number of campsites (restricted to 13 rest camps) is 632 (Table 2). Although each campsite can accommodate as many as six visitors, it is unrealistic to take the upper limit as the average occupancy rate for each campsite. Statistics from SANParks provide an average occupancy of three people per campsite, and this has been used to calculate the total number of campers at 1896. For huted accommodation, unit- and bed- occupancy rates are available and the total number of beds available at 25 accommodation nodes (excluding the two camping camps) is 4179 beds. In addition, 10 wilderness trails can accommodate 80 visitors and 24 concession lodges accommodate a total of 1047 visitors (Table 2, Map 3).

If the total area of the Kruger National Park is considered, then there is one kilometre of road for every 746 hectares (Table 1). For the southern region the density of roads increases to 497 hectares for every kilometre of road. For Hluhluwe-iMfolozi Game Reserve in KwaZulu-Natal, which covers 96,453 hectares and incorporates 245 kilometres of visitor roads, the road density is 393 hectares per kilometre of road. In the example of the Ithala Game Reserve (29,653 hectares and 139 kilometres of roads) the figure is 213 hectares per kilometre of road. Mkhuzo Game Reserve (a



fenced-off portion of the iSimangaliso Wetland Park) covers 37,985 hectares and contains 97 kilometres of visitor roads, which equates to 391 hectares per kilometre of road.

These figures indicate that the density of visitor roads, even in the southern region of the Kruger National Park, is lower than for the provincial game reserves in KwaZulu-Natal. Such a comparison, however, is only the first step in the process. The number of day visitors travelling on the roads, especially during peak holiday periods, and the number of hectares per bed also needs to be calculated and compared to other protected areas.

Table 1: The four management regions of the Kruger National Park and length of visitor roads

Region	Area in hectares	Tarred roads in km	Gravel roads in km	Total length of roads	Hectares per km of road
Southern	419290	280	563	843	497.37
Central	509239	203	443	646	788.29
Northern	448148	213	418	631	710.22
Far Northern	536410	187	255	442	1213.59
Total	1913087²	883	1679	2562	746.71

Visitor perceptions and distance to the entrance gates

The Kruger National Park measures 352 kilometres in length from south to north, and ranges in width from 42 to 85 kilometres. The vegetation of the park is underpinned mainly by parallel bands of igneous rocks such as granite, rhyolite, gabbro, gneiss and basalt, which give rise to 35 vegetation types described by Gertenbach (1983). The two vegetation types where wildlife is described as abundant are found in the southern or central regions (Gertenbach, 1983, 55, 68), while five of the six vegetation types where wildlife is described as uncommon are situated in the far northern region (Gertenbach, 1983, 62, 92, 93, 103, 110, 117).

Historically, the N4 and N12 roads from Johannesburg and Pretoria were the main access routes to the park, and they still provide the shortest distance. (Figure 8). The improvement of the N1 as far as Polokwane has done nothing to alter this pattern. If the toll road charges between Johannesburg and Punda Maria, and Johannesburg and the nearest gate (Malelane), are calculated, the charges differ by only 4% (Drive South Africa). However, the far northern Punda Maria Gate is 140 kilometres further from Johannesburg than Malelane Gate is, and Pafuri Gate is 199 kilometres further. Historic visitation patterns which have become established since 1927, customer perceptions that there is little wildlife in the far northern region, and the concentration of privately-owned lodges outside the park in the Mbombela and Bushbuckridge municipalities, are far more plausible explanations for the preference of visitors in the southern and central regions.

The division of the Kruger National Park into four regions is a useful tool for analysing regional visitor densities. In most instances, the boundaries of a region are a reasonable distance from the nearest rest camp, so the regional analysis remains valid, although in some instances it is possible for visitors who are staying in one region to travel into another region during the course of a day. If visitor roads and all accommodation are taken into account, then the southern region comprises 21.9% of the Kruger National Park, but contains nearly one-third of visitor roads (tarred and gravel) and 47.7% of overnight accommodation.

Although the central region has a reputation of offering high quality game-viewing, in part due to an extensive network of gravel roads which follow the meandering courses of the N'waswitsontso, Ripape, Sweni, N'wanetsi and Timbavati rivers, this region accounts for 26.6% of the park's surface area but contains 18.2% of all accommodation (Dennis & Brett, 2000, 15). Unlike the southern region

² Calculated from the area of the 22 ranger sections combined, and including the Ngala concession land, the area of the Kruger National Park is 5053 ha less than in the Kruger National Park Management Plan (2018). This may be due to the inclusion of land in the north-western corner of the Makuleke contractual area.

which is accessed through five entrance gates, a private entrance and Skukuza Airport, there is only one entrance gate for the central region (Map 1).

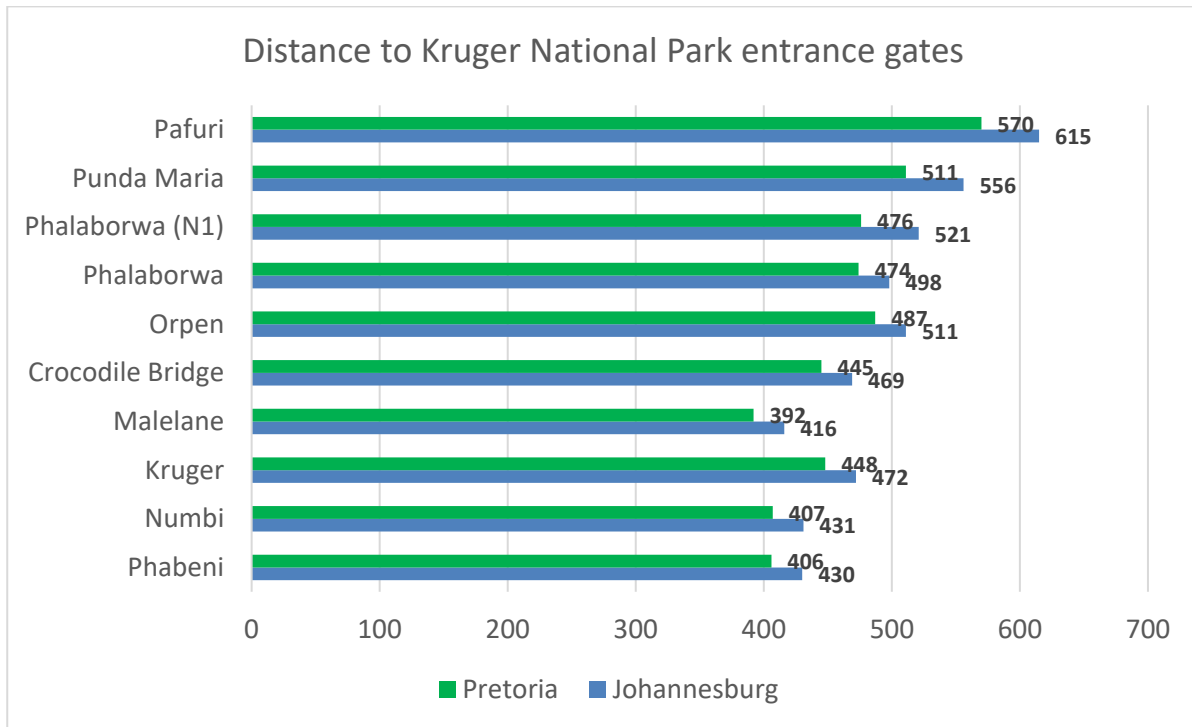


Figure 8: Distance from Gauteng to the nine Kruger National Park entrance gates in kilometres

The northern region accounts for 23.4% of the park’s land area and contains 24.6% of all roads and 21.4% of accommodation. This is due to the presence of three large rest camps within this region, including the 494-bed Mopani Camp which was completed in 1991.

The far northern region, mainly due to its perceived distance from major cities, although it comprises 28% of the park’s surface this region has 17.2% of visitor roads and 12.6% of visitor accommodation. The relative lack of accommodation in the far northern region is later discussed under recommendations.

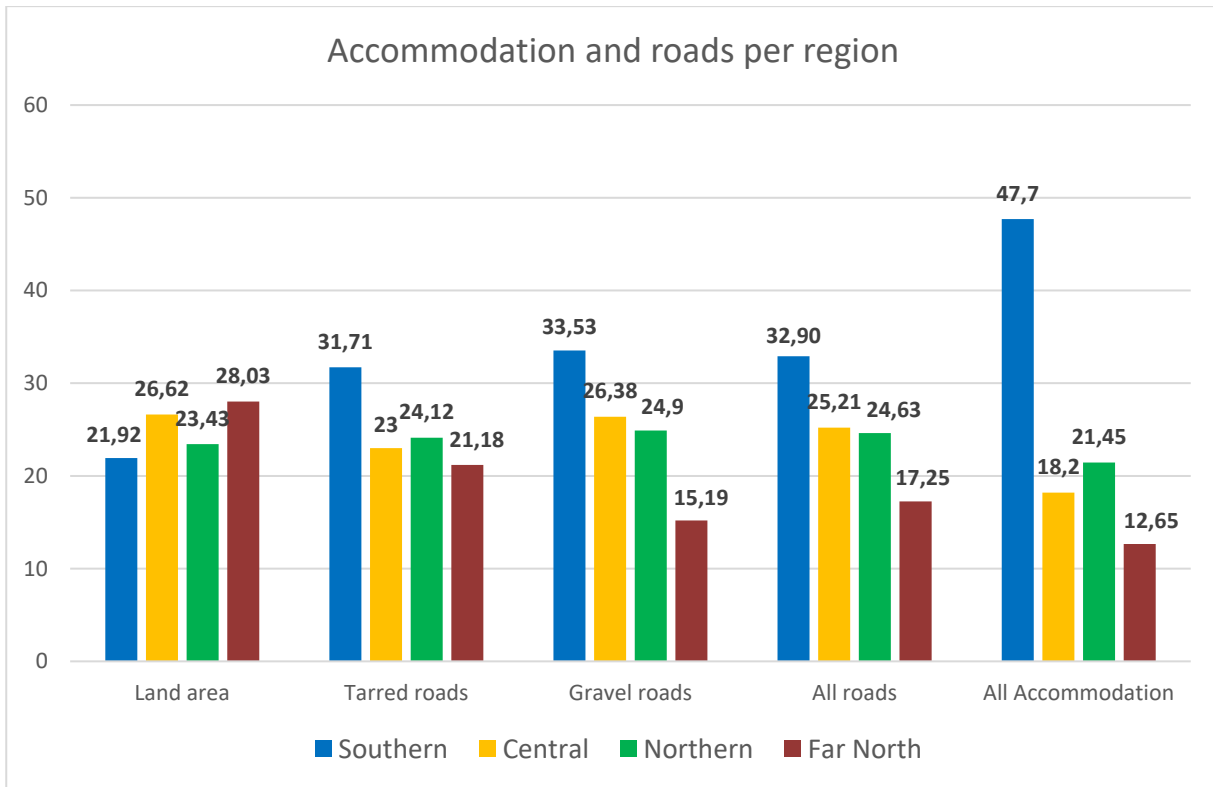


Figure 9: Regional distribution of roads and accommodation in the Kruger National Park

As the 27 accommodation nodes vary in capacity from six beds for an overnight hide to 860 for Skukuza, analysis should look at the size of each rest camp and determine whether size has an influence on occupancy rate. The scatter plot (Figure 10) shows that there is a weak positive relationship between occupancy rate and the number of beds in a camp ($\rho = 0.16$, $p < 0.444$).

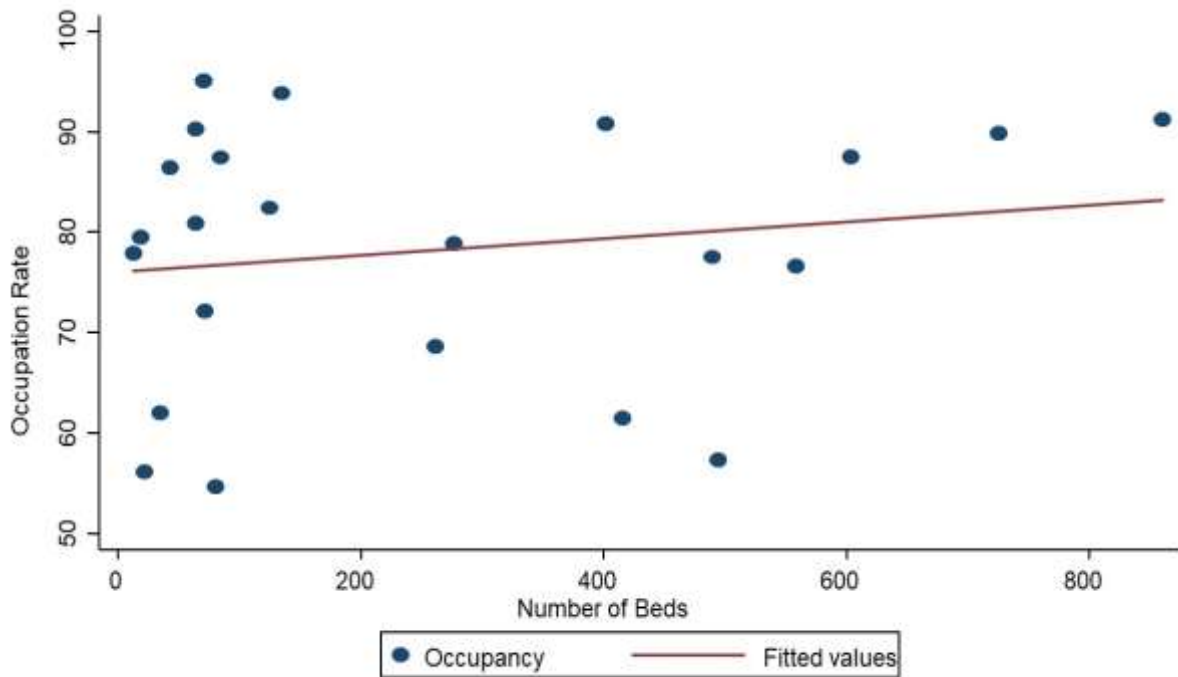
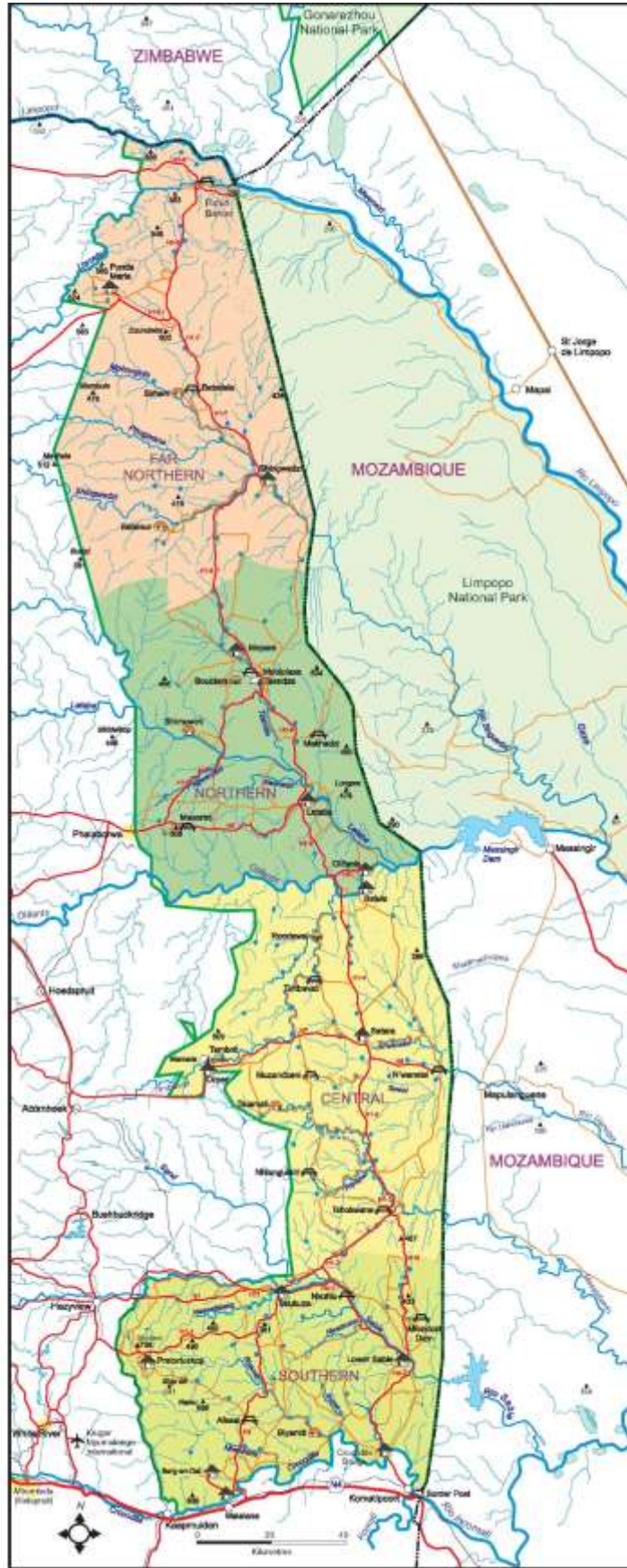


Figure 10: Best fit for the Kruger National Park's rest camps illustrating that there is a weak positive relationship between occupancy rate and the number of beds ($\rho = 0.16$, $p < 0.444$).



Map 1: The four management regions of the Kruger National Park Source: Author's own

Table 2: Distribution of visitor accommodation in the Kruger National Park by management region



Rest camp ³	Beds	Camp- ing ⁴	Total	Wilderness Trail	Total	Concession lodge	Total	Total as % of total for Kruger	Land area as % of Kruger
Southern Region									
Malelane	18	45	63	Wolhuter	8	Nkambeni	608		
Berg-en-dal	357	246	603	Bushman	8	Buffalo Rock	20		
Pretoriuskop	360	129	489	Napi	8	Jock	24		
Skukuza	605	255	860			Jock Explorer	6		
Biyamiti	70	0	70			FitzPatrick's	6		
Crocodile Bridge	74	60	134			Lukumbi	28		
Lower Sabie	299	102	401			Lion Sands Narina	18		
						Tinga Legends	18		
						Shishangeni	44		
						Camp Shonga	10		
						Camp Shawu	10		
Total for region	1783	837	2620		24		792	47.7%	21.92%
Central Region									
Talamati	84	0	84	Mathikithi	8	Rhino Post	16		
Orpen	42	0	42	Sweni	8	Rhino Plains	8		
Maroela	0	60	60	Olifants	8	Hamilton's	12		
Tamboti	124	0	124			Hoyo	12		
Satara	416	309	725			Imbali	24		
Roodewal	18	0	18			Ngala	45		
Balule	18	45	63			Ngala Tented Camp	12		
						Singita Sweni	12		
						Singita Lebombo	30		

³ Camps are arranged from west to east and south to north

⁴ Based on an average of three people per campsite



Total for region	702	414	1116		24		171	18.2%	26.62%
Northern Region									
Olifants	276	0	276	Olifants Backpacker	8				
Sable Dam Hide	9	0	9	Lonely Bull Backpacker	8				
Letaba	378	180	558						
Shimuwini	71	0	71						
Boulders	12	0	12						
Tsendze	0	102	102						
Shipandani Hide	6	0	6						
Mopani	494	0	494						
Total for region	1246	282	1528		16		0	21.45%	23.43%
Far Northern									
Bateleur	34	0	34	Mphongolo Backpacker	8	The Outpost	24		
Shingwedzi	235	180	415	Nyalaland	8	Pafuri Camp	32		
Sirheni	80	0	80			Baobab Hill Bush House	8		
Punda Maria	78	183	261			Makuleke Eco-training	20		
Pafuri Border	21	0	21						
Total for region	448	363	811		16		84	12.65%	28.03%
Total for Kruger Park	4179	1896	6075		80		1047	100%	100%

Has visitor capacity been exceeded?

The Kruger National Park currently contributes R825 million annually directly to the regional economy of the Lowveld (Kruger National Park Management Plan, 2018, 29). At present, 78.4% of the total of 1.8 million visitors are day visitors and Open Safari Vehicles (OSVs) accounted for 246,662, or 13.5%, of all visitors (Ferreira & Harmse, 2014, 28; SANParks, 2017). Visitor crowding during peak holiday periods is not a new trend in the Kruger National Park (Figure 14), but increasing visitor numbers are resulting in considerable pressure, particularly in the southern region (Figure 15).

Apart from its direct economic contribution to the region, the park indirectly supports more than 200 neighbouring lodges (Map 3). Many of these lodges are located on the private game reserves

adjacent to the Kruger National Park, such as Sabi Sand, Timabavati, Klaserie and Balule. Private game lodge owners often take their visitors to the Kruger National Park, and make use of entrance gates such as Orpen, but the majority of OSVs originate from companies based in Hazyview, White River and Nelspruit (Mbombela).

In total, 86% of all OSV entrants originate from five entrance gates in the southern region, as well as Skukuza Airport and the private Mjejane Game Reserve on the Crocodile River on the southern border (Figure 11). However, of the total, 64% of all OSVs are entering at just three gates – Numbi, Phabeni and Kruger – which is indicative of a concentration of operators in Mbombela Municipality. Mpumalanga International Airport is located 76 kilometres from the two nearest entrance gates.

Although there is opposition to these vehicles from other park users, OSVs offer a distinct advantage from the perspective of visitor management as the average OSV carries 6.6 visitors compared to 3.4 for ordinary cars (Kruger & Saayman, 2014, 4). Opposition to OSVs from other visitors is due to the behaviour of certain drivers at sightings of predators and Big Five species, the fact that many OSVs are in radio contact and soon congregate at a sighting, and the accusation that the drivers are inconsiderate of other park visitors.

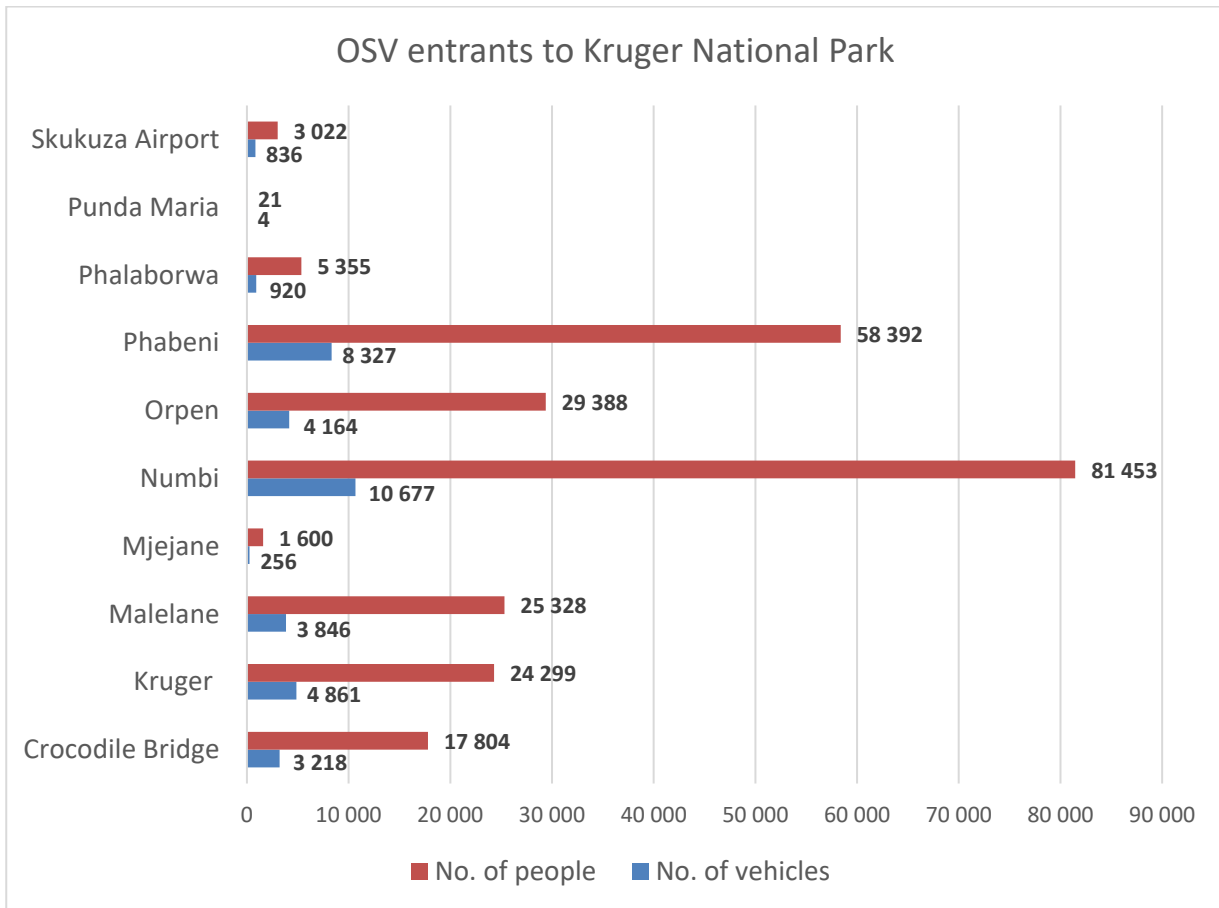


Figure 11: Open Safari Vehicle (OSV) entrants to Kruger National Park for 2016/2017

When day visitors and OSV entrants are added to the concentration of hatted accommodation, campsites and concession beds, this results in high visitor densities in the southern region which exceed those of most other African national parks. The Kruger National Park is currently the only savanna national park in Africa, and which offers a visitor experience based primarily on wildlife viewing, which receives more than 500,000 visitors per annum (Institute of Economic Affairs, 2016; World Bank, 2015, 37). The total number of visitors to all the national parks and national reserves in Kenya for 2015 was 1,953,800, and the Tsavo National Park, which is approximately the size of the Kruger National Park, received 108,000 visitors (Institute of Economic Affairs, 2016; The Kenyan



Camper, 2016). As one of the core tenets of ecotourism is that it is not mass tourism, and as large numbers of visitors can disrupt animal behaviour and create a host of problems, large concentrations of visitors are considered to be incompatible with this brand of tourism (Ferreira & Harmse, 2014, 20). Ferreira and Van Zyl (2016) describe the “McDonaldization” of casual dining in the park and summarise the issue as follows, “the idea of establishing franchised restaurants in a nature-based tourism destination, such as KNP, was met with divided opinions, polemical discourse and scholarly argument about the issue of mass tourism to national parks” (Ferreira & Harmse, 2014, 49).

Although the southern region contains 47.7% of accommodation, SANParks is proceeding with the development of two lodges and a development in Skukuza which will add 550 to SANParks’ beds, or 31%, to a region that is already carrying considerable visitor volumes (Ferreira & Harmse, 2014, 26). The response in 2016 by the then-CEO, David Mabunda, was to say, “The inbound tourism market and the emerging middle class have repeatedly demanded a product that provides a full service in addition to the safari experience without ‘Disney-fication’ of the park... guests to the hotel will not be driving in the park as guests of the camps do, they will be offered a ‘park and-ride’ service very similar to that of private game lodges...So instead of having a typical N1 highway traffic congestion...we will have these cars neatly tucked away and fill up existing park game drive vehicles, which are running at 50% occupancy, to enhance the game-viewing experience in the most appropriate way and help towards reducing the menace of traffic on the park’s roads” (Siyabonga Africa).

At an officiating ceremony in Skukuza in 2017, the response from government was to quote figures which indicate that the Kruger National Park does not have a visitor crowding problem. At the launch of a R269 million (\$22.6 million) hotel development, the Minister of Environmental Affairs stated, “the development also heralds the beginnings of the development of the first of the SANParks owned brand of Wild Hotels, Lodges and Resorts. We are therefore, confident that this facility will not significantly increase the human footprint of the park as plans are underway to ensure that patrons to Skukuza Safari Lodge will either be transported by charter flights or group transport like tour busses...the current development footprint in the Kruger National Park, comprising of tourist facilities, staff housing, tourists roads, support infrastructure and management roads, currently constitutes 6,285 ha or 0.3% to the total of 2,000,000 ha of the park. In terms of international IUCN standards a park could be developed to 10% of its size. This means the claims of over-development and over commercialisation of the Kruger National Park are exaggerated and unfounded” (Steyn, 2017).

While the argument that only 0.3% of the park is developed has some validity, the point being missed is that the 1.8 million visitors per annum are restricted entirely to this 0.3% of the park’s surface. If 10% of the park were to be developed, according to the IUCN standards, does this mean that the Kruger National Park could accommodate 60 million visitors per annum? The most visited national park in the United States of America received 11.338 million visitors in 2017, so such a figure would have no international precedent (National Park Service).

A survey of a social media group supports the view that visitor numbers, at least during school holidays and perhaps at other times of the year, have reached levels where they constitute a definite management problem (Ferreira & Harmse, 2014, 30). A questionnaire conducted amongst 255 members of a social media group reveal that a majority believe that the Kruger National Park is receiving too many visitors during school holidays (51.7%) while a further 38.8% felt that the park is receiving too many visitors. Only 5% of respondents believed that the park is not receiving too many visitors (Figure 12).

However, a total of 308 respondents replied to questions about visitor crowding in the southern region, where 47.7% of accommodation is concentrated, and 90.9% believed that the region is carrying too many visitors. Of the total, only 5.5% disagreed with the statement (Figure 13).

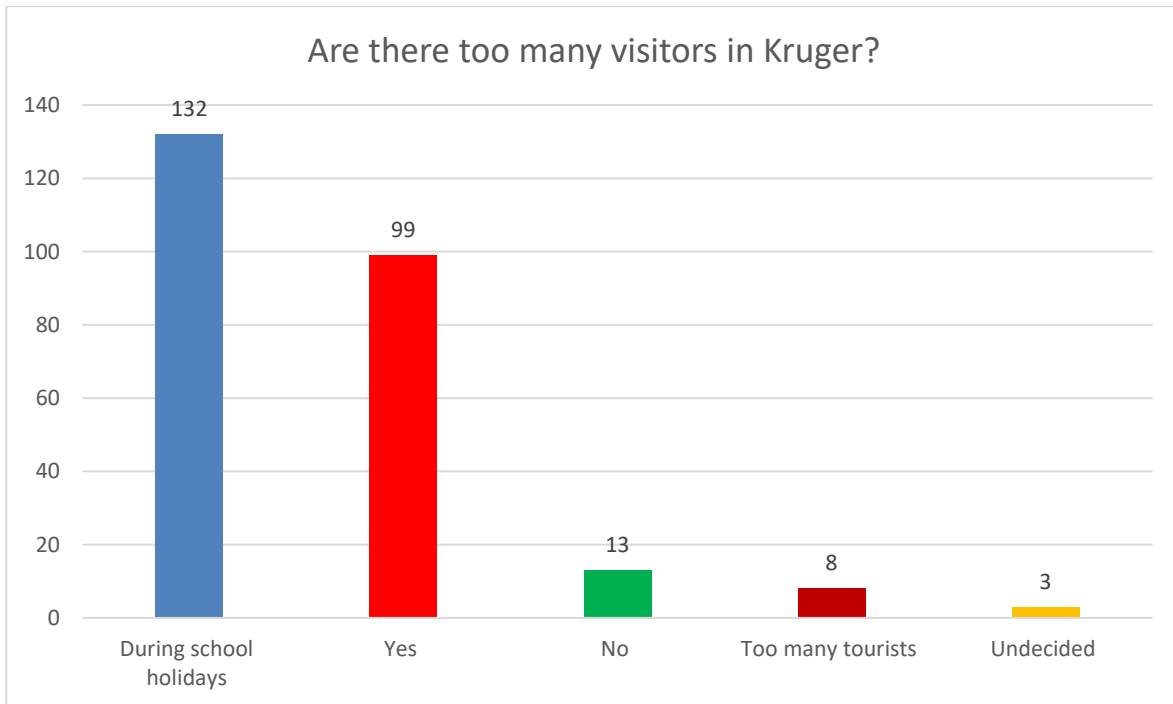


Figure 12: Respondents' views of current visitor numbers in Kruger National Park

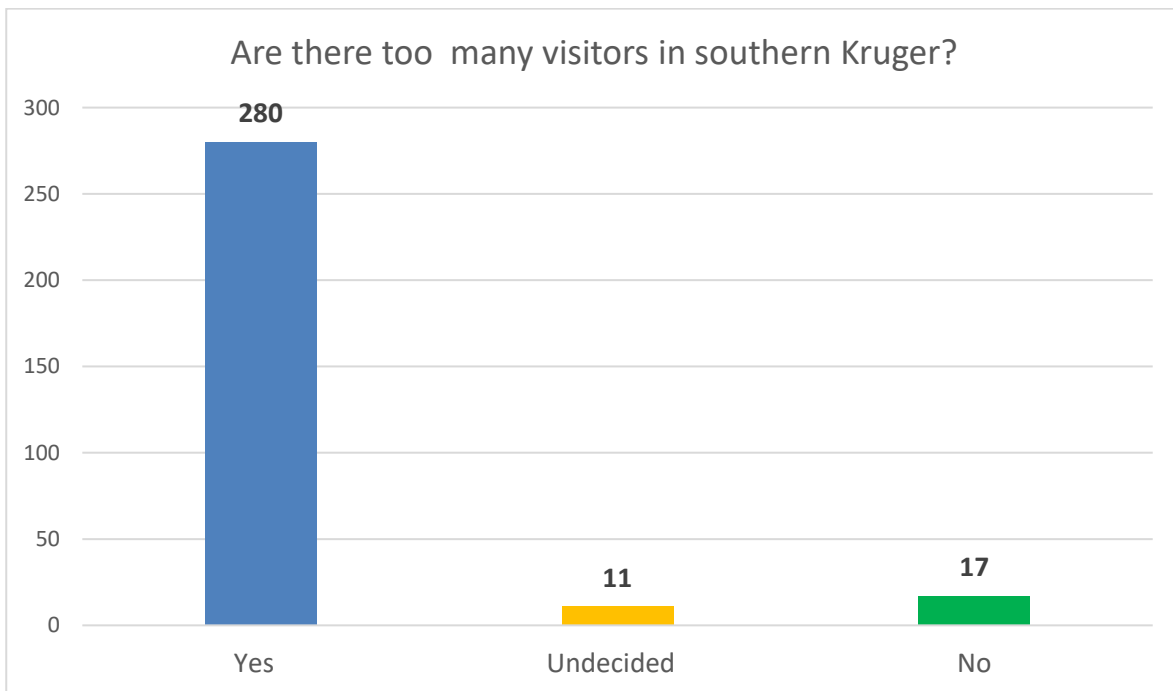


Figure 13: Respondents' views of current visitor numbers in the southern region of Kruger National Park



Figure 14: Traffic congestion whenever predators were encountered was already reported as early as the 1950s
Source: South African Railways calendar, www.flickr.com/photos/hilton-t/4001704864



Figure 15: Traffic congestion in the southern region of the Kruger National Park during school holidays including two Open Safari Vehicles (OSV) Source: Author's own



Figure 16: Opened in 1995, Tamboti Tented Camp on the Timbavati River is currently the only exclusive tented camp in the Kruger National Park Source: Author's own



Figure 17: Completed in 1984, Berg-en-dal Rest Camp in the south-western corner of the southern region, represents a departure from the Kruger National Park's traditional architecture style Source: Author's own



Current developments are adding an additional 550 beds in a region already carrying high visitor volumes, and an unfenced tented camp is proposed for Nkuhlu, which was not included in the 2018 management plan (Reed, 2017; SANParks, 2018a, 99). The revised management plan of 2011 included the provision of one additional entrance gate and rest camp, five tented camps, four camping camps, eight overnight hides and nine picnic sites. The camping camps were proposed for the northern and far northern regions, as were three of the five tented camps. Taking current norms into account, the proposed facilities would probably have added an additional 12% to the bed capacity of the park.

In the revised 2018 management plan, there has been a refinement of the proposed developments and the list has been altered to include one wilderness camp, two platforms, two overnight hides, two picnic sites, two tented camps, and two lodges on the border of the park. The camping camps have been omitted and the number of tented camps reduced to two. There has also been a reduction in the picnic sites proposed for the southern region from five to two, and the proposed peripheral development at Phalaborwa was not included in the 2011 plan. A tented camp and a rest camp has been proposed for the central region which has a lower bed density rate than the southern region.

Kruger and Saayman (2014, 6) found that visitors to the northern half of the Kruger National Park rated “education” as their main motivator for visiting the region, while visitors to the southern half recorded “escape”. Given the distances from Gauteng and visitor perceptions that there is less wildlife to be seen in the northern and far northern regions, it is impractical to develop the northern half of the park as an alternative destination to the southern and central regions. This is acknowledged in the latest management plan, which states, “Kruger North does not have a potential to generate income comparable with that of the South” (SANParks, 2018a, 39).

Although the current number of visitors entering the Kruger National Park is not high when compared to certain American national parks, the number is very high for the standards set by nature-based tourism in Africa (World Bank, 2015; Institute of Economic Affairs, 2016; National Park Service, 2018). The sub-culture which has developed since 1927, where visitors are at liberty to traverse the park on their own and without a guide, results in a high number of vehicles. Other management options are available, such as guided drives in larger vehicles during peak holiday periods, but these could well be met with customer resistance.

Recommendations - proposals for the future

The latest statistics reveal that 1,817,724 visitors entered the park in the 2016/2017 year, which represents a doubling in 15 years from 2001/2002 (SANParks, 2017). In three of the last five years, the annual rate of increase has exceeded 6% per annum. At a 6% rate of increase, visitor numbers will double to 3.65 million by 2028/2029.

Maps 2 and 3 reveal that in the 57 years since 1961 there has been a considerable increase in both visitor roads and accommodation in the Kruger National Park. Tared roads now radiate from five entrance gates in the southern region and travel north to within seven kilometres of the Zimbabwe border. Since 1961, the number of accommodation nodes has increased from 14 to 27, and there are an additional 24 concession lodges in the park. Concurrently, tourism has increased in the districts adjoining the park, and there has been a significant increase both in the number of private game reserves and privately-owned lodges. The Lowveld of Mpumalanga and Limpopo has become one of South Africa’s foremost tourist regions. The latest income statements reveal that the Kruger National Park generated R825 million in the 2016/2017 financial year (SANParks, 2018a, 29). The majority of people employed in the park originate from the eight municipal areas bordering the park (SANParks, 2018a, 29). The direct and indirect economic impact of the park was calculated in 2006 as R496 million (Saayman & Saayman, 2006, 76), and could exceed R1.7 billion now. Tourism accounts for 5.97% of the GDP of Mpumalanga province, or twice the national average for South Africa (Saayman & Saayman, 2006, 77).



While tourism has increased significantly since 1961, the success of the industry does not detract from the ongoing problem of poverty in the Lowveld region. Eight municipalities in Mpumalanga and Limpopo border and include the Kruger National Park, and in 2016 their population was 3,055,319 (Municipalities of South Africa). If the area of the park is excluded, this equates to a population density of 93.5 people per km² for 32,648 km², or more than twice the average for South Africa of 45.8 people per km². In reality this population density is much higher as the private game reserves (Map 3) have a very low human population (SANParks, 2018a, 96).

Carruthers (1995) states, “the white public of South Africa has come to regard its national parks with a considerable degree of pride, and these areas have come to symbolize the morality of protecting the wildlife heritage of the nation...Moral altruism, however, merely obscures the political and economic reality of conservation issues and unless the ‘other side’ of conservation is appreciated, understood and taken into account, there may be little left to conserve – even within national parks” (89).

SANParks is determined to increase the number of black visitors to national parks, and black visitors now comprise 41% of South African day visitors, but only 11.7% of South African overnight visitors to the Kruger National Park (SANParks, 2017). Despite the concentration of more than three million people in the former homelands of KaNgwane, Gazankulu and Venda on the park’s western border, black visitors still do not comprise the majority of local day visitors.

The following recommendations could help to alleviate the problems caused by an increasing influx of visitors to the Kruger National Park:

1. Better management of OSVs

There is considerable opposition on social media to the Open Safari Vehicles (OSVs). Opposition arises from the tendency of drivers to monopolise sightings of predators, the fact that they are in radio contact and can quickly access a sighting, and the perception that they disregard other visitors. Due to the fact that many OSVs originate from private game reserves and towns bordering the Kruger National Park’s southern and central regions, this concentration is also resulting in conflict between OSV operators and other visitors in the two regions of the park which are already carrying high visitor volumes (Ferreira & Harmse, 2014, 28; SANParks, 2017).

However, in 2016/2017 the average OSV carried 6.6 visitors, and the game-viewing trucks operated by SANParks carry nine or 20 visitors. The problem with driver-led drives may therefore be more one of management of this sector, rather than to outlaw it. Not only are OSVs currently carrying 13.5% of the visitors entering the Kruger National Park, but the latest reliable statistics indicates an increase on the previous year of 16.8% (SANParks, 2017). The environmental impact of fewer vehicles carrying a higher number of visitors will be less than for a large influx of private vehicles carrying an average of 3.4 visitors per vehicle.

2. Park and Ride

The “Park and Ride” scheme is a joint venture between SANParks and Vuswa Fleet Services and is a recent initiative aimed at empowering communities on the periphery of the park (SANParks, 2018b).

The scheme operates from Numbi, Phabeni and Kruger gates, and will be extended to additional entrance gates. The duration of each drive is four hours, and two drives depart per day from the affected gates. The scheme has considerable merit and SANParks should consider “value adds” such as including meals cooked by local people in the bush, or allowing drivers to access roads closed to the general public, and other incentives which would encourage visitors to leave their cars at the entrance gates. A “Park and Ride” scheme will be implemented for the new Malelane Lodge.



3. Peripheral developments

The 2018 management plan proposes two peripheral developments at Phalaborwa and at Shangoni near the Shingwedzi River, and two lodges have been approved at Malelane and Skukuza (SANParks, 2018a, 99).

There are four, state-owned nature reserves (Map 3) bordering the Kruger National Park. These protected areas should be incorporated into the Kruger National Park and will add 84,000 hectares to the park. The 2018 management plan presents a strong case for incorporating these protected areas into the park (SANParks, 2018a, 103, 232). As these four provincial nature reserves are located in former homelands, potential exists for job creation and local poverty alleviation.

4. Regional branding

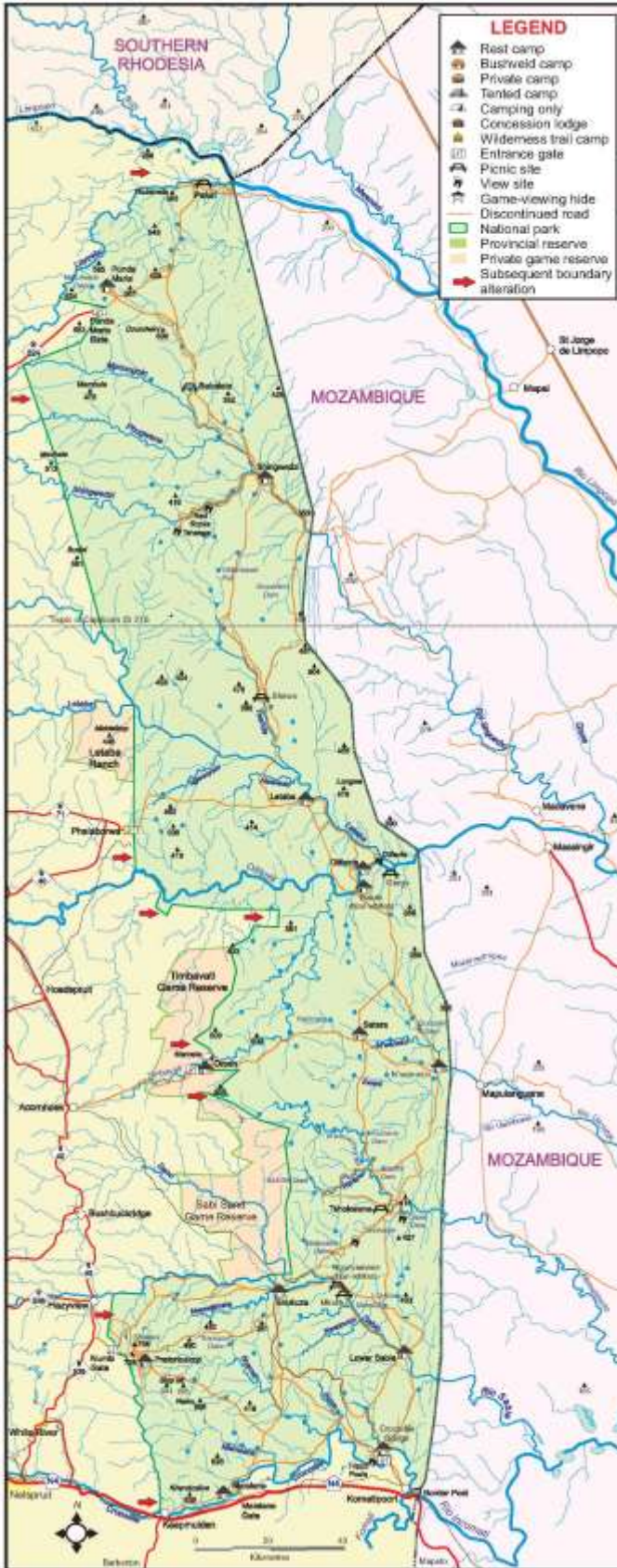
The Kruger National Park brand is internationally known but a “one size fits all” approach should be reconsidered (Kruger & Saayman, 2014, 2, 6). SANParks accepts that the northern and far northern regions can accommodate fewer tourists, although the construction of the 494-bed Mopani Camp in 1991, which is the 5th largest camp in the park, was out of step with this acknowledgment. This camp has the lowest occupancy rate of any of the park’s 12 large camps. The bushveld camps in the northern and far northern regions have a far lower occupancy rates to Biyamiti and Talamati, the two bushveld camps in the southern and central regions. Biyamiti has the highest unit occupancy rate in the Kruger National Park at 95.1%, while Sirheni, in the far northern region, has an occupancy rate of only 54.8% (SANParks, 2017).

Consideration should therefore be given to the separate branding of Kruger’s four regions and the retention of the far northern region as a remote wilderness. The introduction of the Pafuri Border house, which accommodates 21 visitors in a former ranger’s house, is in line with such a separate branding. As part of the separate branding, consideration could be given to the construction of small, exclusive camps, such as Balule, which could be unfenced and cater for visitors seeking a wilderness experience. Such camps could be made accessible only by 4x4 vehicles and would cater to the considerable nostalgia, and an interest in the park’s history, which exists amongst many visitors (Saayman and van der Merwe, 2008, 157).

The average overnight length of stay in the Kruger National Park for hatted accommodation is only 1.74 nights per visitor, which is surprisingly low for an internationally recognised tourist destination (SANParks, 2017). SANParks should consider ways to encourage longer length of stay in the rest camps, such as Mopani, where occupancy rates are lower than the average for the park. The tourism industry has much expertise in creating “value adds” and these successes could be applied to the northern and far northern regions.

Conclusion

The Kruger National Park faces many challenges and its undisputed success over the past 90 years could well prove to be its downfall. While the park has undoubtedly been a success on many levels, the natural system has limitations. Electronic word-of-mouth has become increasingly important in the tourism industry, and the Kruger brand is being damaged by negative word-of-mouth in social media sites (Litvin, Goldsmith & Pan, 2008, 461). Apart from environmental degradation, water provision problems and visual pollution, increasing volumes of poorly-managed visitors are going to damage the Kruger brand (de Bruin, 2011).



Map 2: Visitor roads and rest camps in the Kruger National Park in 1961 Source: Author's own



Map 3: Visitor road and rest camps in the Kruger National Park in 2018, including the adjoining national park in Mozambique Source: Author's own



The Kruger National Park currently receives the highest number of visitors for any African national park where wildlife viewing is the primary attraction. Research by Saayman and van der Merwe (2008, 157) recorded “escape” followed by “nostalgia” as the two most important motivators amongst 2899 visitors. Given the importance of these motivators, arguing that the Kruger National Park is not over-developed is unlikely to succeed in avoiding criticism that the park is overcrowded.

The ecotourism market has grown significantly since 1927 and has become highly competitive. There are national parks located within one to two hours of major cities which offer a high quality wildlife experience. Considerable improvements in the South African road network also make it now possible to visit a national park over a weekend. Continuing negative word-of-mouth on social media poses a potential danger to the Kruger brand. At the same time government regards the national park as a vital tool for the alleviation of poverty in the Lowveld (Steyn, 2017).

Although poverty remains a serious problem for the park’s neighbours, the success of the Kruger National Park should not be used as an excuse by provincial and national government to neglect their obligations to uplift impoverished communities. As the tourism industry contributed R127.9 billion (\$10.7 billion) directly - or only 3% of the total – to the South African GDP in 2016, the Kruger National Park, on her own, cannot be regarded as a panacea for all the socio-economic problems afflicting 5% of the national population (World Travel and Tourism Council, 2018, 3). If the park is regarded as being largely responsible for the upliftment of three million people, then considerable pressure will be exerted on the sustainability of the system. In the 2018 Kruger National Park Management Plan, the report states, “an Integrated Regional Land Use approach requires a systemic approach for the integration of National Parks into the broader economic and social landscapes through appropriate strategies, mechanisms and incentives and through encouraging complementary economic activity. It promotes and improves conservation and ecosystem services, transboundary catchment management, allows for sustainable natural resource use, whilst unlocking direct commercial benefits to communities, and developing the necessary skills and capacity” (SANParks, 2018a, 103).

The integration of national parks into integrated regional land-use remains highly contested territory. Since 1961 there have been no fewer than eight boundary adjustments (Map 2) which suggests that national parks are never inviolate and ultimately depend on the political will of the majority, including impoverished communities living on the western boundary. In a number of instances, there has been an increase in the national park’s land area and its adjoining suite of private game reserves, but such developments are ultimately dependent on political will. Although a national park can never be viewed as “a world apart”, and attempts were made in the past to market the Kruger National Park as such (Carruthers, 1995, 86, 87; Carruthers, 1997, 129) but neither is a national park a nature-based theme park that is open for “Disney-fication” and cannot be developed indefinitely (Ferreira & Harmse, 2014, 28, 29). For the Kruger National Park to make a meaningful contribution to alleviating poverty in the region, tourism development must be carefully integrated and part of a basket of government interventions and development projects (Ferreira & Harmse, 2014, 31). What can be done to preserve the core asset and at the same time deliver on socio-economic and regional development objectives?

At current rates, visitors to the Kruger National Park will double within 11 years, but SANParks has no plans to double roads or accommodation. Balancing the many and often conflicting demands placed on the park will require considerable foresight and skilled management. More effective management of visitors, particularly during peak holiday periods, and innovative solutions to the problems created by visitor overcrowding remain urgent research priorities.

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