OBSERVATIONS ON THE MIGRATION AND HABITS OF THE ANTELOPES OF THE KALAHARI GEMSBOK PARK

Part III.

PROF. F. C. ELOFF.

The observations recorded here were made during a 10-day visit to the Kalahari Gemsbok Park in September, 1959. At this time of the year general conditions in the Kalahari are usually very bad, since it marks the end of the long, dry winter. This year was no exception. Wind and dust storms made matters worse and especially in the powder-dry bed of the Nossob River, clouds of dust made conditions extremely unpleasant.

The observations are summarised under the headings used in previous reports.

1. ANIMAL MOVEMENTS.

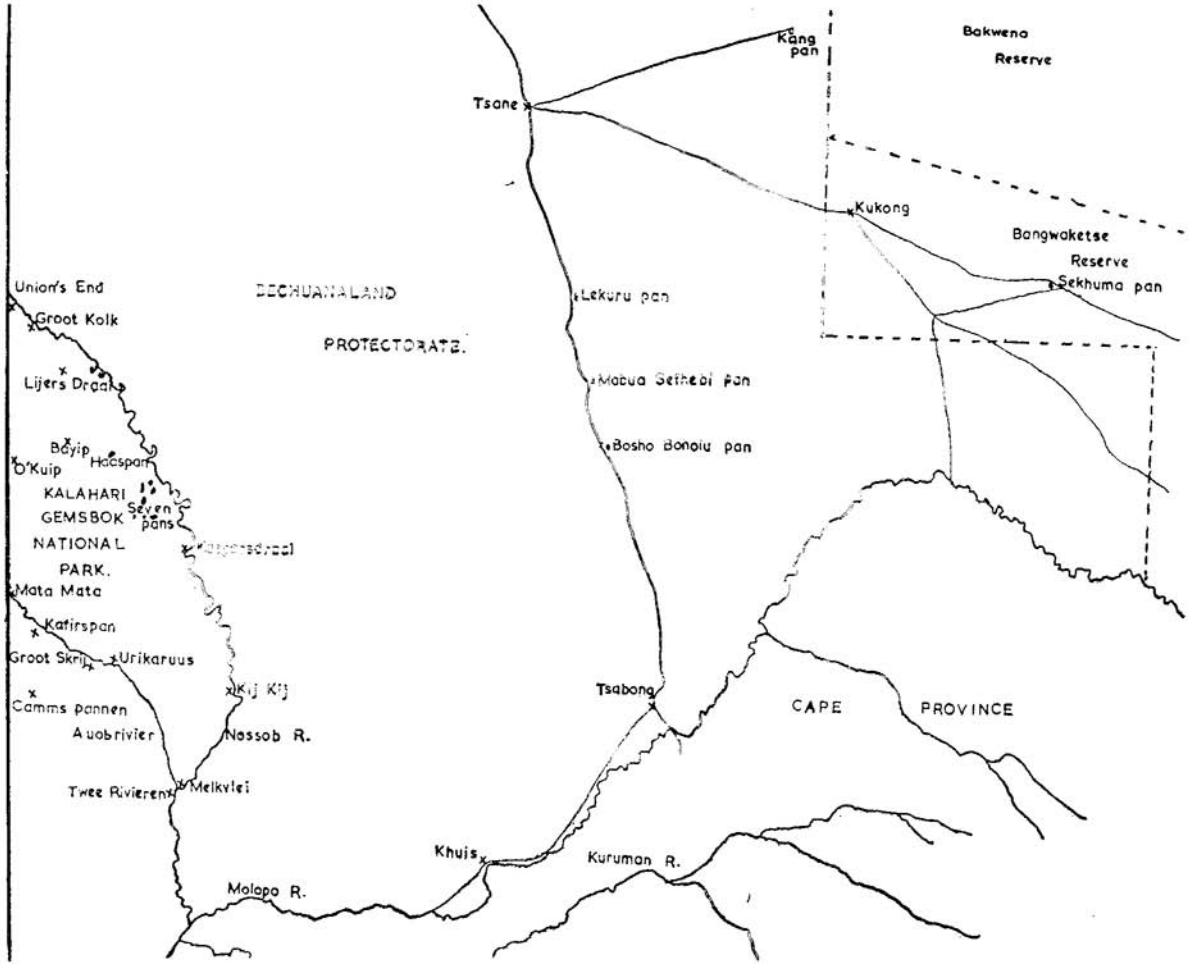
Although no direct observations on animal movements were made, some indirect evidence came to light which may contribute towards the elucidation of this interesting problem.

No large-scale movements from the Park were recorded in the course of the year, but with the Nossob River almost totally devoid of game it is quite obvious that large numbers of springbok, red hartebeest, gemsbok and blue wildebeest must have left this area, probably several months earlier, in search of better grazing. The all-important question is: what happened to the game that habitually frequent this area?

Direct evidence on animal movements within the boundaries of the Park is lacking, but the author is greatly indebted to the Hon. J. van Riet Lowe, District Commissioner of the Kgalagadi District, and Inspector D. H. Somerset, Station Commander at Tsabong, for some valuable information on animal movements in the adjoining Bechuanaland Protectorate, movements which are of essential interest to the Park.

The following report is based on information received from them.

Considerable activity and shifting movements occurred amongst the springbok of certain areas between March and July, 1959. In the area enclosed by Mabua Sehubi Pan (one of the so-called middle pans between Tsabong and Tsane), Kang and Kukong, huge concentrations of springbok were noticed between March and April, 1959. Commencing in May, thousands of springbok from between Mabua Sehubi and Tsane started moving in a south-south-west direction. Concentrations from between Tsane and Kang moved after them in the same direction. This operation appears to have been


Kang pan
Bakwena Reserve
Tsane
Kukong
Bangwaketse Reserve
Sekhuma pan
Union's End
BECHUANALAND PROTECTORATE.
Groot Kolk
Lekuru pan
Lijers Draai
Matua Setlebi pan
Bosho Bonolu pan
Bayip
O'Kuip
Haespan
KALAHARI GEMSBOK NATIONAL PARK.
Seven pans
Mata Mata
Katirspan
Groot Skrij
Urikaruus
Kij Kij
Tsabong
CAPE PROVINCE
Camms pannen
Auobrivier
Nossob R.
Twee Rivieren
Melkvlei
Khuis
Kuruman R.
Molopo R.

The Gemsbok:

Acacia detinens, Acacia haematoxylon, Aristida obtusa, Aristida amabilis, Aristida uniplumis, Asthenatherum glaucum, Crotalaria spartioides.

At this time of the year *Asthenatherum* appears to be the most important item on the gemsbok's menu. Wherever we found large herds of gemsbok, *Asthenatherum* was predominant and always heavily grazed. Other grasses that are probably important at this time of the year are *Aristida uniplumis* and *Aristida meridionalis*, both of which were well grazed by gemsbok in some areas.

3. ANIMAL NUMBERS.

Counts were made as far as possible to establish the relative abundance and general distribution of the game animals.

Contrary to the procedure followed in the first two reports all the census tables will not be published, as some of them are of very limited value. In some cases the total number only will be indicated. Points of interest will be pointed out wherever necessary.

TABLE 1.

Number of animals counted on a trip from Twee Rivieren to Mata Mata on 12.9.59. Time of departure 8.30 a.m. Time of arrival at destination 1.30 p.m.

Class Interval	Springbok	Gemsbok	Blue-wildebeest	Red hartebeest	Eland	Steenbok	Duiker
(in miles)							
0— 4							
5— 9	2	1					
10—14							
15—19	6	1					
20—24	14						
25—29		4		1			
30—34	23	3					
35—39		3					
40—44	1	7					
45—49		5					
50—54	8	9	18				
55—59	100	7					
60—64	11	16					
65—69		3	40				
70—74			2				
75—77							

TABLE 2.

Number of animals counted on a trip from Twee Rivieren to Soutboorgat on 13.9.59. Time of departure 7.45 a.m. Time of arrival at destination 12.45 p.m.

Class Interval	Spring-bok	Gems-bok	Blue-wil-debeest	Red har-tebeest	Eland	Steen-bok	Duiker
(in miles)							
0— 4							
5— 9	40		1			2	
10—14	1						
15—19	520						
20—24	19	2			3	1	
25—29	19	17					
30—34		13		8			
35—39							
40—44	2	7					
45—49							
50—54							
55—59	1						
60—64							
65—69	34				11		
70—72		5					

This table is a good indication of the distribution of game in the Nossob River. Within the first 25 miles of Twee Rivieren there is an area of 10-15 miles that harbours a lot of springbok. The river bed itself is almost bare at this time of the year but the adjoining dunes on both sides of this limited part of the river contain a great variety of food plants. It has been pointed out before that this area resembles a typical Karroo vegetation, and springbok are always fairly abundant here.

A portion of this area must have had a late shower of rain and the "streets" between the dunes adjoining the river had an abundance of such ephemereal plants as *Helichrysum argyrosphaerum, Plinthus* sp. and *Gnaphalium* sp.

The large number of springbok constantly found in this area can therefore be accounted by, firstly, the variety, and secondly, the abundance of some species of food plants.

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5— 9	40		1			2	
10—14	1						
15—19	520						
20—24	19	2			3	1	
25—29	19	17					
30—34		13		8			
35—39							
40—44	2	7					
45—49							
50—54							
55—59	1						
60—64							
65—69	34				11		
70—72		5					

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Trip from TWEE RIVIEREN to GROOT SKRIJ (via Camms Pannen and

Kafirs Pan) on 14th September, 1959. Total distance: 64 miles.

On this trip we counted 101 gemsbok, 5 steenbok and 2 duiker. Although grazing conditions were very bad, the animals were in excellent condition.

Trip from GROOT SKRIJ to URIKARUUS (Auob River) on 15.9.59.

Total distance: 28 miles.

We encountered 62 gemsbok, 2 springbok and 18 steenbok. The springbok occurred on a dune which adjoins the river.

On our way we saw at least six eland carcasses, the remains of animals that died of starvation at the beginning of the year.

TABLE 3.

Number of animals counted on a trip from Mata-Mata to Bayip, via Seven Pans and Haaspan on 16.9.59. Time of departure 9.30 a.m. Time of arrival at destination 7 p.m.

Class Interval	Springbok	Gemsbok	Blue-wildebeest	Red hartebeest	Eland	Steenbok	Duiker
(in miles)							
0— 4		1					
5— 9		12				2	
10—14		5					1
15—19		9					
20—24		67				2	
25—29		94			5		
30—34		4			9	3	
35—39	4	11				1	
40—44		2					
45—49		2					
50—54						2	
55—59		4				1	

Four springbok were seen at Seven Pans.

The large number of gemsbok of the 5th and 6th class intervals occurred in an area of irregular red dunes, which interrupt the monotonous vaalkameel flats. *Asthenatherum* was predominant here and was heavily grazed. The real flats had little game. This part had a shower of rain in March or April and the grass was in better condition than elsewhere. There were plenty of winter ephemereals, mainly *Helichrysum,* which are relished by all species.

The area from Seven Pans to Bayip (about 25 miles north-north-east of

Seven Pans), an area that we have not seen on any of our previous visits, consists mainly of irregular, grass-covered dunes, almost treeless except for an occasional vaalkameel. Around the pan at Bayip trees were fairly abundant, mainly *Acacia giraffae* (kameeldoring), *Acacia uncinata* (swartbas) and also *Terminalia sericea* (vaalbos) and *Acacia detinens* (swarthaak).

From BAYIP to GROOT KOLK the following day, a distance of 30 miles, we counted 42 gemsbok and 9 steenbok. This trip took us through diversified country: irregular, grass-covered dunes, interrupted now and then by wide open spaces where *Aristida uniplumis* was particularly prominent. This was relieved by red dune country, with wide open spaces and many kameeldoring, some of which grow to a fine size, quite unexpected so far from the river. The red dunes lasted almost uninterruptedly for 9 miles, and gradually changed into low, flat covered dunes, with an isolated vaalkameel here and there. The last 12 or 15 miles to Groot Kolk was burnt down and with the vegetative cover destroyed, animal life was limited to a few lonely gemsbok. The last few miles to Groot Kolk consisted of rolling, savannah country with numerous kameeldoring, rosyntjiebos *(Grewia flava)* and an occasional vaalkameel. This part had good rains since it was burnt down and we drove through miles of waving *Schmidtia,* standing knee-high and presenting, by way of contrast, a lovely sight.

From GROOT KOLK to KASPERSDRAAI, a distance of 71 miles, we counted, on the afternoon of the 17th September, 95 springbok, 8 gemsbok, 13 blue wildebeest and 48 red hartebeest. Compared to the number of game that the Nossob usually carries, this number is indeed negligible.

At Lijersdraai we went up with the Pollentswa River for a few miles into Bechuanaland. Whereas this dry river teemed with wild life in July, 1958, it was bare and lifeless on this occasion.

From KASPERSDRAAI to TWEE RIVIEREN on the 18th September, distance 77 miles, we counted 387 springbok and 28 gemsbok. A herd of 250 springbok about 20 miles from Twee Rivieren made up the bulk of the total number. The rest occurred either in small herds or as single individuals.

DETOUR THROUGH BECHUANALAND ON THE 19th SEPTEMBER. After our very interesting and stimulating discussion with the D.C. of the Kgalagadi District we decided to make an attempt to locate the "missing" springbok herds referred to above. We regarded it as a matter of great importance to locate their whereabouts, as it would contribute a great deal towards the elucidation of this antelope's migratory habits.

Unfortunately, one of our vehicles broke down on the first day of this

venture and the whole trip had to be abandoned. With the remaining vehicle we made a detour of 47 miles through the Bechuanaland National Park to get a general impression of the vegetation and concentration of game in that area. This trip did not reveal much except of a negative nature. In the course of 47 miles we encountered 89 gemsbok, 9 blue wildebeest, 6 red hartebeest, 6 steenbok and 1 duiker. The whole area through which we travelled consists of irregular grass-covered dunes, without any trees, except the occasional vaalkameel, witgat *(Boscia albitrunca)* and swarthaak. The last few miles before we reached the Nossob had quite a number of fine kameeldoring trees.

For about one-third of the distance traversed we travelled through an area that was burnt down to the ground, and for a vast area the dunes were red, bare and lifeless, presenting a grim sight. A narrow strip of this burnt area had a shower of rain after the fire and had an abundance of ephemereals, amongst which *Helichrysum, Senecio arenarious, Berkheyopsis echinus* and *Chrysochoma tenuifolia* were conspicuous. Tsammas *(Colocynthis citrullus)* were also plentiful almost all the way. Where the grass was not burnt the grazing was good, and with all the ephemereals this area could support a lot of game. Yet game was very scarce, which seems to indicate that conditions elsewhere must have been very favourable.

On re-entering the Nossob at Kij-Kij we encountered 700 springbok within the first 5 miles. This particular part of the Nossob, bounded by a narrow strip of Karroo-like vegetation, is the most prolific area in the Park at the present time.

MATA MATA to UNION'S END on 21.9.59. Distance 72 miles.

It is hardly worthwhile publishing all the details of this trip, because only 129 gemsbok and 3 steenbok were seen, and of this number 110 gemsbok occurred in the 7th and 8th class intervals. The other 19 occurred either singly or in small herds consisting of a few individuals. Over the last 22 miles to Union's End we saw one steenbok and not a single gemsbok on the Park's side of the boundary, although we saw a considerable number on the South West African side of the fence.

The large number of gemsbok which we encountered in the 7th and 8th class intervals occurred on the typical vaalkameel flats where *Aristida meridionalis* and *Asthenatherum* are predominant, with *Aristida amabilis* also plentiful. All these types were well grazed. The grass of this area appeared to be in particularly good condition and much greener than some miles back. This particular area had good rains some months ago, including a severe hailstorm, which is always highly beneficial to the grass. There were also plenty of tsamma up to a month ago.

From O'Kuip-borehole (which lies about midway between Mata-Mata and Union's End) to Union's End grazing conditions appeared to be good and indications are that this area carried a lot of game until recently.

TABLE 4.

Number of animals counted on a detour from O'Kuip (midway between Union's End and Mata-Mata) to Mata-Mata on 22.9.59. Time of departure 8 a.m. Time of arrival at destination 1.30 p.m.

Class Interval	Springbok	Gemsbok	Blue-wildebeest	Red hartebeest	Eland	Steenbok	Duiker
(in miles)							
0— 4		60				1	
5— 9		32					
10—14		110					1
15—19		97				1	
20—24		23				1	
25—29		4					
30—34							2
35—39		4				1	
40—44							

Within the first 20 miles from O'Kuip we encountered 300 gemsbok, including an unusually high number of young animals. This large number of gemsbok occurred on the typical vaalkameel flats, flat country with miles of visibility, interrupted occasionally by low grass-covered dunes.

In the author's first report it was maintained that these vaalkameel flats are probably of low carrying capacity. It was a pleasing sight, therefore, to see such a large number of animals on these dreary flats.

Asthenatherum is the dominant type of grass with *Aristida meridionalis* and *Aristida amabilis* fairly abundant, and *Aristida uniplumis* plentiful in some areas. Trees were restricted to small vaalkameel. Only once in the first 20 miles was this typical cover interrupted when we passed through a low-lying saline depression, about a quarter mile in cross section, where *Monechma incanum* and *Schmidtia* were dominant.

Where the large herds of gemsbok grazed, the grass was in better condition than most other regions of the Park. *Asthenatherum* was conspicuously green, and the lower portions of the other types of grass were also green and succulent. About 18 miles from O'Kuip we left this area behind and entered terrain where the grass was very dry and dense. The number of game showed

an immediate decrease in abundance and this again proves that these animals congregate wherever the food supply is better.

4. DISTRIBUTION OF GAME ANIMALS.

Owing to the bad conditions that existed over the greatest part of the Park, the Nossob was almost devoid of game, except for the small area between Melkvlei and Twee Rivieren, that harboured a large number of springbok.

In previous reports the total number of animals counted in the Auob and Nossob sections were compared, but under these circumstances such a comparison serves no purpose.

The following general remarks about the distribtuion could be made.

With the two river beds almost bare, the springbok's main feeding grounds were on or amongst the dunes immediately adjoining the river. During the hottest hours of the day they were almost invariably found resting in the shade of the large kameeldoring trees found in the river beds or other trees in or adjoining the river beds.

The general distribution of gemsbok was much the same as that observed on previous occasions, i.e. they have an overall distribution with concentrations at certain points, such as drinking places, pans where salt-licks are available and where the grazing is particularly good.

In one important respect a previous statement on this animal's food and habitat preference must be modified. In the first and second reports on this animal's distribution it was emphasised that the gemsbok has a distinct preference for the red dune country, while they seem to avoid the vaalkameel flats with its uninterrupted grass cover. This statement probably holds good for certain times of the year, when ephemereals and other foodplants are obtainable amongst the red dunes in sufficient quantities. When food becomes scarce they congregate on the vaakameel flats, and on the present trip the largest concentrations of gemsbok were found on the flat country, and not amongst the dunes.

The flat country with its coarse grass cover was supposed to be of very low carrying capacity and was indeed regarded as a very bad substitute which is utilised under emergency conditions only. The excellent condition of the gemsbok, however, belies this conclusion, and it is indeed encouraging to know that these infertile vaalkameel flats play an indispensable role in the ecology of the gemsbok.

The Auob had its usual quota of blue wildebeest and they still inhabit the same area. The significance of this herd with its sedentary habits was

pointed out before. Judging from the number of young animals, these blue wildebeest must have had an exceptionally good calving season.

Blue wildebeest were very scarce in the Nossob River. Apart from a single herd, consisting of 13 animals, the only blue wildebeest encountered in this area was a solitary bull which was seen on a number of occasions, usually in the company of a herd of springbok.

Only 90 red hartebeest were counted on the whole trip. One of these occurred in the Auob, the rest in the Nossob or in its immediate vicinity.

Eland were very scarce and the few animals that were encountered in various parts of the Park were always restless and on the move, typical behaviour of this nomadic animal.

The small number of duiker and steenbok that were encountered corroborate the general view that was expressed before with regard to their habitat preference, namely that they are true dune animals, and that they very seldom drink water. It seems worthwhile to record, though, that we saw a steenbok in the middle of the night — about 2 a.m. to be exact — a few yards from a drinking pool in the Nossob River, and there seems to be very little doubt that it came to drink water, proving again that where water is available the game will readily make use of it, even those species that can do without it.

5. GENERAL OBSERVATIONS.

The most important observation of the whole trip has a bearing on the breeding cycle of the gemsbok, one of the pivotal points of this investigation.

It is generally assumed that the gemsbok does not have a regular breeding season. In a way this is true, because gemsbok calves are found at probably all times of the year. This gave rise to the general idea that the gemsbok breeds throughout the whole year, but nobody appears to have bothered about the question as to whether its breeding activities are evenly distributed over the whole year, or whether there are one or more peak periods in its breeding cycle, when more young are born than at any other time of the year. This is a very important point in establishing the breeding cycle of the gemsbok and the various factors involved in it.

The whole matter of breeding cycles will be discussed more fully at a later stage when more data are available, but at this stage it seems desirable just to point out the very important fact that the gemsbok does seem to have at least one peak period in its breeding cycle every year.

An unusually high numbers of calves were observed on the last trip. Out of a total of 1,445 gemsbok counted on the present trip, 101 were calves of less than 4 weeks old, compared to 9 (out of a total of 1,307) in December, 1957,

and 6 (out of a total of 2,350) in July, 1958.
nurseries, a phenomenon which has been referred to by various authors. Contrary to the general opinion, however, these nurseries are not always left in the care of one or more gemsbok cows, which are supposed to act as nursemaids. The calves were usually found lying down, and when they were alone, did not run away until we were very close to them.

On one single trip we counted 52 young animals and 279 adults in the space of 18 miles. Of the 52 young animals, 48 could be regarded as born within that month. Of 25 young animals encountered the previous day, 20 were regarded as September-born.

Whether we saw the breeding season at its height or whether it was merely the initial stage of the calving season is hard to say, but it seems fairly obvious that we struck one of the peak periods in the gemsbok's breeding cycle. September (and the succeeding months perhaps) could therefore be regarded as one of the peak calving periods, or perhaps the only peak period per annum. The exact period is probably influenced by various ecological factors and it could well be earlier or later. Further observations in this respect are essential.