In view of control measures by the neighbouring farming community the annual exploitation of the buffalo population in the study area is likely to continue, in a greater or lesser degree, along the boundary fence. It is also reasonable to assume that the population may remain temporarily stable or may even decline naturally during a succession of drought years or a future epidemic.

The fact remains however, that this population having increased from an estimated 8 individuals in 1902 to the present 2,132, has attained the safe limit of its available food supply during poor raining seasons. Before natural regulating mechanisms effect a beneficial decimation of the numbers of buffalo in the study area during such times, over-utilisation of the available grazing may reach alarming proportions. The nett result is serious degradation of the habitat and calamitous effects on the numerically weaker and less adaptable grazing competitors.

The present population of 2,132 can therefore hardly be allowed further latitude for increase. Judging from the results of the 1964 and 1966 aerial counts in the study area, and a more recent census (1967) of all buffalo in the Park, when it was found that 17 well known, isolated herds increased from 5,524 (in 1964) to 6,035, the Crocodile Bridge population can also be expected to expand further during a future period of successive favourable years. It should be borne in mind that the increase in numbers of the 17 herds mentioned above (representing a nett annual increment rate of 3 per cent) occurred over a period which included both very lean and bountiful seasons.

The life table procedure for estimating the ability of a population to maintain itself, and for the constructing of survivorship curves cannot be applied in the present situation, in view of the small size of the sample. The practical value of data obtained in this manner is also questionable in the present case, as there are so many variable factors affecting the respective parameters that it seems hardly possible to arrive, for instance, at a true estimate of the mean expectation of life (vide natality rates influenced by changing environmental conditions, yearly infant and adult mortality rates greatly influenced by predation pressure, prevailing grazing conditions and water supplies, epidemic diseases and control measures along the border fence). Unless a much larger sample, representative of the death rates of all age classes in the population can be obtained yearly, for a succession of years, reflecting all manner of environmental conditions, the life table technique appears to be of limited value for establishing a basis for annual culling quotas.

The only practical solution to the immediate problem of calculating culling rates is complete aerial censusses of all buffalo in the study area (as well as in the rest of the Park) at regular intervals, and relating the resulting increase or decline in population totals to the influence of the different mortality factors during the intervening period.

Provided that the favourable environmental conditions (abundant grazing and water) in the study area persist, and the population is to be maintained at its present level, a culling rate somewhat in excess of 2.6 per cent per annum seems indicated. It is obvious that considerable modification of this culling rate will become necessary during future periods of prolonged drought, epidemics etc., but the reproductive and essential population ecological data forthcoming from the provisional culling quota will provide the basis for more refined and predictable management procedures.

SUMMARY

A random sample of 100 buffalo was collected from the large Crocodile Bridge population in the Kruger Park by means of drug darts. Data recorded during this pilot culling operation shed additional light on such aspects of the population ecology of buffalo as natural sex rations; age structure of the population; size category characteristics such as body measurements, weight, growth and development; reproduction; food and water requirements; mortality factors (including predation and diseases); and annual increments to the population.

The annual recruitment rate and the factors affecting it, provide a basis for establishing future culling ceilings for this and other populations.

A number of physical characteristics are also described which may be of use as field age criteria.

ACKNOWLEDGEMENTS

I am indebted to the National Parks Board of Trustees for providing the facilities and for sanctioning the culling scheme on which this paper is based.

To all my colleagues in the Veterinary research centre and in the field staff, particularly Drs. E. Young and V. de Vos and Messrs. A. de Clerck, C. Lombard and L. Swanepoel, my sincere appreciation for their enthusiastic and unselfish assistance with the numerous and often tedious measurements, the interpretation and results of which made the whole project an unqualified success.

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* The references marked with an asterisk are those referred to in the text.

TABLE 1.

VITAL STATISTICS OF 100 CAPE BUFFALO COLLECTED AT RANDOM IN THE CROCODILE BRIDGE SECTION OF THE KRUGER NATIONAL PARK.

Serial No.	Date	Estimated age group of specimen	Estimated age of individual	Sex	Measurements (centimetres) Body: Body length	Shoulder height	Elbow height	Chest girth	Horns: Tail length	Ear length	Widest span	Tip-to-tip	Length along curve	Circumference around base	Physical condition	Weight readings (Kilograms) Total body weight minus fluid loss	Total body weight expected for fluid loss	Weight of stomach plus contents	Weight of stomach without contents	Weight of stomach contents (wet)	Weight of dried stomach contents
48	7.6.66	Suckling calves ('Infants')	ca. 6 months	♂	146.7	85.7	53.3	108.6	40.0	17.8	24.1	24.1	8.2	15.2	Good	93.9	97.5	12.7	1.8	10.9	1.4
92	15.8.66	do.	ca. 5 months	♂	132.1	78.7	50.8	101.6	40.6	16.5	21.6	21.6	8.2	12.7	Poor	79.8	84.4	12.2	3.6	8.6	1.3
94	15.8.66	do.	ca. 9 months	♂	151.1	97.8	61.0	123.8	53.3	17.8	34.3	34.3	14.6	17.1	Good	153.7	156.0	36.2	5.4	30.8	3.4
32	11.5.66	do.	ca. 5 months	♂	133.3	87.6	53.3	103.5	41.9	16.5	19.0	19.0	5.7	11.4	Fair	82.1	88.9	9.1	2.3	6.8	1.1
49	7.6.66	do.	ca. 4 months	♂	127.0	78.1	48.3	98.4	36.8	15.9	17.1	17.1	4.4	11.4	Fair	73.9	75.7	9.5	2.0	7.5	1.2
90	22.6.66	do.	ca. 7 months	♀	149.9	89.5	51.4	109.2	45.7	17.8	20.3	20.3	7.6	15.2	Fair	86.2	91.2	11.4	2.7	8.7	1.1
70	8.7.66	do.	ca. 4 months	♀	120.6	83.8	52.1	102.9	36.8	15.2	18.4	18.4	6.3	12.7	Good	66.7	69.4	8.6	2.0	7.0	1.0
			ca. 5 months	♀	134.6	85.1	53.3	110.5	45.7	16.5	20.3	20.3	9.5	15.2	Good	97.5	103.4	15.0	3.6	11.3	1.7
45	6.6.66	Juveniles	ca. 16 months	♂	194.3	111.8	61.0	157.5	63.5	22.9	54.6	41.9	45.7	38.1	Good	281.2	283.0	64.4	12.7	51.7	6.9
10	30.3.66	do.	ca. 18 months	♀	195.6	123.2	63.5	162.6	58.4	21.6	44.4	27.9	43.2	31.7	Good	311.1	323.0	65.3	10.9	54.4	8.1
14	4.4.66	do.	ca. 18 months	♂	184.1	123.8	63.5	156.2	61.0	21.6	41.9	25.4	33.0	24.1	Good	293.9	303.9	71.5	13.6	59.9	9.7
43	26.5.66	do.	ca. 14 months	♂	177.8	109.2	62.2	152.4	47.6	21.6	39.4	21.6	30.5	27.9	Good	241.3	244.0	52.6	10.4	42.2	4.9
90	5.8.66	do.	ca. 16 months	♂	188.0	116.8	64.8	153.7	62.2	21.6	41.9	30.5	34.3	27.3	Good	249.0	259.4	66.2	9.1	57.1	8.1
100	17.8.66	do.	ca. 18 months	♀	182.9	127.0	64.8	156.2	57.1	22.9	48.3	26.7	36.8	30.5	Good	304.8	311.2	72.6	10.9	61.7	9.5
61	23.6.66	2 Year old sudadults	ca. 2½ years	♂	213.4	124.5	67.9	175.3	72.4	21.6	64.8	29.8	64.8	59.0	Good	394.2	404.6	89.4	12.7	76.7	11.5
95	16.8.66	do.	ca. 2 years	♂	190.5	107.9	63.5	158.1	67.9	21.6	54.6	19.0	61.0	48.9	Good	264.9	282.1	67.1	10.9	56.2	8.0
97	17.8.66	do.	ca. 2½ years	♂	217.2	123.2	63.5	185.4	71.1	24.1	68.6	50.8	68.6	58.4	Good	371.9	376.5	94.3	15.4	78.9	9.6
4	18.3.66	do.	ca. 2 years	♀	199.4	123.2	66.0	163.8	69.8	21.6	52.1	31.7	44.4	29.2	Good	326.6	341.1	74.4	14.5	59.9	7.2
24	28.4.66	do.	ca. 2½ years	♀	190.5	126.4	66.0	161.3	57.1	20.9	48.3	26.0	39.4	30.5	Good	299.8	314.3	78.9	16.3	62.6	9.0
73	18.7.66	do.	ca. 2½ years	♀	190.5	121.9	66.0	165.1	71.1	21.6	49.5	34.3	45.7	36.8	Good	318.9	323.4	70.8	11.3	59.4	9.7
27	29.4.66	3 Year old subadults	ca. 3 years	♂	219.7	134.6	68.6	184.1	64.1	24.8	71.1	39.4	81.3	62.7	Good	468.6	482.6	97.1	18.1	78.9	12.6
38	10.5.66	do.	ca. 3½ years	♂	223.5	135.9	70.5	188.0	74.9	24.1	73.7	26.7	87.6	69.8	Good	455.0	468.6	110.7	20.0	90.7	11.4
52	24.5.66	do.	ca. 3½ years	♂	224.8	130.0	67.9	194.3	68.6	22.9	81.3	40.6	83.8	64.8	Good	467.7	481.7	103.4	20.0	83.5	13.1
65	9.6.66	do.	ca. 3 years	♂	204.5	129.5	67.3	181.0	69.8	24.1	69.8	34.3	78.7	59.7	Good	394.2	406.0	87.1	12.7	74.4	12.6
66	5.8.66	do.	ca. 3 years	♂	208.9	120.6	66.0	161.9	55.9	22.2	64.8	27.3	68.6	52.7	Good	324.8	334.8	71.7	11.8	59.9	9.1
72	29.4.66	do.	ca. 3½ years	♂	219.1	135.9	67.9	188.0	69.2	26.0	66.0	31.1	63.5	36.8	Good	478.1	492.6	101.6	20.0	81.6	11.8
	18.7.66	do.	ca. 3½ years	♀	201.9	121.9	67.3	170.2	55.9	22.9	66.0	38.1	61.0	35.6	Fair	332.0	342.0	70.8	12.7	58.1	9.9
2	17.3.66	4 Year old young adults	ca. 4 years	♂	237.5	132.1	76.2	198.1	77.5	26.7	78.7	38.1	86.4	74.9	Good	505.3	520.3	113.4	21.8	91.6	12.1
35	14.4.66	do.	ca. 4½ years	♂	229.9	141.0	71.1	194.3	61.0	22.9	82.5	38.1	96.5	71.1	Good	515.7	531.2	108.9	20.9	88.0	13.0
63	12.5.66	do.	ca. 4½ years	♂	240.0	138.4	67.9	208.3	72.4	25.4	83.8	38.1	99.7	71.1	Good	518.9	534.3	97.1	23.6	74.5	10.3
65	21.5.66	do.	ca. 4½ years	♂	255.3	143.5	66.7	202.6	71.1	24.1	95.2	70.5	98.4	74.3	Good	601.0	611.2	119.7	20.0	99.8	15.7
67	5.7.66	do.	ca. 4½ years	♂	240.0	133.3	69.2	185.4	81.9	22.9	81.3	46.3	91.4	68.6	Poor	453.1	466.7	90.7	14.5	76.2	12.2
68	16.8.66	do.	ca. 4½ years	♂	210.8	135.9	67.3	190.3	61.0	24.1	67.3	47.0	67.3	62.2	Good	367.0	377.8	81.6	14.5	67.1	9.0
28	9.5.66	do.	ca. 4½ years	♀	219.7	129.5	63.5	184.1	Tail lost	24.1	69.8	51.4	54.6	36.8	Good	416.4	429.1	88.9	15.4	73.5	11.3
68	8.7.66	do.	ca. 4½ years	♀	226.1	127.0	69.8	194.3	66.0	24.1	73.7	52.1	66.0	49.5	Good	483.5	498.0	112.5	21.8	90.7	15.5
86	4.8.66	do.	ca. 4½ years	♀	234.9	134.6	68.6	201.3	68.6	25.4	67.9	42.5	62.2	36.8	Good	555.7	572.8	128.8	18.1	110.7	16.4
13	12.4.66	5 Year old young adults	ca. 5½ years	♂	224.8	138.4	72.4	189.2	62.7	22.2	83.2	41.3	90.2	62.2	Good	455.4	469.0	96.2	22.7	73.5	12.4
39	24.5.66	do.	ca. 5 years	♂	249.9	142.2	75.2	204.4	69.2	24.8	94.6	51.4	96.5	74.3	Good	560.2	577.0	107.0	23.6	83.5	14.3
85	3.8.66	do.	ca. 5½ years	♂	244.5	132.1	68.6	198.7	74.9	23.5	86.4	54.0	86.4	71.7	Good	599.2	617.3	147.0	20.0	127.0	11.1*
95	15.8.66	do.	ca. 5½ years	♂	226.1	130.8	68.6	188.0	68.6	25.4	81.3	43.2	85.1	67.3	Good	479.9	494.4	132.4	20.0	112.5	13.3
5	28.3.66	do.	ca. 5½ years	♂	237.5	138.4	69.8	196.8	66.7	24.8	64.8	36.8	64.8	38.7	Good	466.9	479.0	112.7	24.5	90.7	11.3
11	1.4.66	do.	ca. 5½ years	♂	221.0	135.9	69.8	188.0	69.8	25.4	67.3	35.6	64.8	36.8	Good	458.8	575.6	120.7	29.0	91.6	12.3
12	11.4.66	do.	ca. 5½ years	♂	223.5	134.6	67.3	185.4	73.0	23.5	69.8	44.4	64.1	43.8	Good	477.3	485.0	105.2	20.9	84.4	10.4
37	11.5.66	do.	ca. 5½ years	♂	214.6	124.5	62.2	172.7	61.0	23.5	64.8	36.8	54.0	33.6	Good	385.6	397.3	81.6	15.4	66.2	11.7
59	23.5.66	do.	ca. 5½ years	♂	217.2	123.2	66.7	185.4	74.3	22.9	55.9	36.2	50.8	47.0	Good	425.5	439.1	96.2	14.5	81.6	12.0
64	5.7.66	do.	ca. 5½ years	♂																	
40	25.5.66	Adults 6-7 years old	6-7 years	♂	252.1	147.9	69.8	208.3	73.7	26.0	96.5	39.0	109.2	80.0	Good	594.2	611.9	117.9	23.6	94.3	12.5
42	26.5.66	do.	ca. 6½ years	♂	246.4	146.0	71.1	211.4	71.1	26.0	94.0	56.5	96.5	78.1	Good	594.2	611.9	123.4	26.8	96.6	12.9
84	7.6.66	do.	ca. 6½ years	♂	225.4	124.5	66.0	187.3	64.8	27.9	71.1	33.6	86.4	62.2	Good	474.0	488.1	99.8	18.1	81.6	13.2
88	20.7.66	do.	ca. 6½ years	♂	243.8	139.7	68.6	203.2	66.7	21.6	87.0	52.7	86.4	69.2	Good	576.5	593.8	117.0	20.9	116.1	17.5
84	3.8.66	do.	ca. 6½ years	♂	253.3	146.0	74.9	201.9	81.3	27.9	94.6	50.8	107.9	74.3	Fair	595.1	612.8	119.7	25.4	94.3	11.9
87	4.8.66	do.	ca. 6½ years	♂	252.7	135.9	68.6	212.1	76.2	25.4	90.2	47.6	94.0	71.1	Good	602.8	621.0	128.8	19.9	108.9	13.9
1	17.3.66	Adults ca. 8-15 years old	ca. 8-15 years	♂	255.3	142.2	72.4	200.7	67.9	22.7	94.0	57.1	85.1	68.6	Good	643.2	662.7	113.4	22.7	90.7	12.9
7	29.3.66	do.	ca. 8½ years	♂	245.1	146.0	73.7	200.7	62.9	24.1	94.0	61.0	91.4	58.4	Good	654.5	674.0	137.9	23.6	114.3	15.0
17	30.3.66	do.	ca. 8½ years	♂	256.5	157.5	73.7	210.2	77.5	24.8	100.3	67.9	92.7	73.7	Good	693.1	714.0	141.5	23.6	117.9	18.5
19	15.4.66	do.	ca. 8½ years	♂	254.0	134.6	67.9	186.2	67.3	24.1	100.3	64.8	99.1	80.0	Good	566.1	582.9	112.5	19.9	92.5	12.7
21	25.4.66	do.	ca. 8½ years	♂	255.3	149.9	71.1	204.5	67.3	25.4	99.4	67.9	100.3	85.7	Good	631.4	650.5	123.4	23.6	99.8	14.7
23	26.4.66	do.	ca. 8½ years	♂	259.1	147.3	70.5	215.3	76.2	25.4	87.6	52.1	86.4	69.8	Good	680.4	700.8	119.7	24.5	95.2	13.3
25	28.4.66	do.	ca. 8½ years	♂	243.8	147.3	69.8	208.3	69.8	25.4	88.9	47.0	96.5	66.0	Good	599.2	617.3	114.3	23.6	90.7	14.0
51	8.6.66	do.	ca. 8½ years	♂	259.1	142.2	69.8	206.4	76.8	26.0	100.3	66.7	97.8	77.5	Good	620.5	639.1	128.8	22.7	106.1	17.0
55	20.6.66	do.	ca. 8½ years	♂	236.2	137.2	69.8	200.7	66.0	24.1	91.4	54.0	99.1	73.7	Good	546.1	562.5	119.7	18.1	101.6	14.3
62	17.6.66	do.	ca. 8½ years	♂	255.3	139.7	69.8	208.3	78.7	23.5	90.2	61.0	91.4	65.4	Good	640.9	660.0	129.7	20.9	108.9	16.9 *
69	8.7.66	do.	ca. 8½ years	♂	243.8	137.2	66.0	202.3	71.7	24.1	83.8	62.9	94.0	76.2	Good	543.9	560.2	110.7	23.6	87.1	13.1
75	19.7.66	do.	ca. 8½ years	♂	257.8	138.4	72.4	208.3	73.7	25.4	78.7	43.8	83.8	72.4	Good	678.1	698.5	156.0	21.8	134.3	20.2
77	20.7.66	do.	ca. 8½ years	♂	255.3	144.8	69.8	207.0	63.5	26.7	87.6	49.5	91.4	78.7	Good	627.8	646.8	160.6	26.3	134.3	14.6
15	13.4.66	Adults over 15 years old	Older than 15 years	♂	261.6	153.7	72.4	208.3	76.2	24.1	102.9	62.2	102.2	76.2	Fair	664.1	684.0	121.6	27.2	94.3	16.4
44	6.6.66	do.	ca. 9½ years	♂	259.7	152.4	66.7	219.1	66.7	24.1	100.3	61.0	99.1	74.3	Good	745.3	767.5	174.2	32.7	141.5	18.5
56	20.6.66	do.	ca. 9½ years	♂	261.6	153.7	71.7	217.2	77.5	25.4	101.6	80.0	87.6	78.7	Good	736.2	758.4	147.4	29.0	118.4	19.9
86	21.6.66	do.	ca. 9½ years	♂	266.7	146.0	68.6	215.3	78.7	24.1	101.0	64.8	101.6	69.8	Good	687.2	707.6	132.4	19.9	112.5	17.6
60	23.6.66	do.	ca. 9½ years	♂	261.6	147.3	72.4	220.3	76.2	25.4	94.0	62.2	97.8	78.7	Good	727.1	748.9	134.3	21.8	112.5	14.1
66	7.7.66	do.	ca. 9½ years	♂	252.7	137.8	71.1	205.7	78.7	24.1	104.1	84.4	94.0	78.7	Good	621.0	639.6	110.7	23.6	87.1	14.0
30	10.5.66	Adults 6-7 years old	6-7 years	♀	227.3	128.3	66.0	196.8	67.3	22.7	66.7	50.2	54.0	36.8	Good	499.0	513.9	107.9	16.3	91.6	13.5
41	25.5.66	do.	ca. 6½ years	♀	242.6	143.5	68.6	199.4	72.4	25.4	68.6	40.6	62.2	36.8	Good	541.5	557.9	130.6	27.2	103.4	14.5
42	26.4.66	do.	ca. 6½ years	♀	228.6	139.7	71.1	193.0	66.0	22.2	73.7	32.4	76.2	47.6	Good	483.1	497.6	116.1	18.1	98.0	13.3
83	2.8.66	do.	ca. 6½ years	♀	226.1	134.6	68.6	186.7	64.8	22.7	76.8	51.4	59.9	33.0	Good	470.8	484.9	112.5	20.9	91.6	12.6
88	4.8.66	do.	ca. 6½ years	♀	233.7	133.3	68.6	198.1	61.0	25.4	81.3	57.1	63.5	53.3	Good	495.3	510.3	112.5	16.3	96.2	15.1
8	29.3.66	Adults ca. 8-15 years old	ca. 8-15 years old	♀	229.9	135.9	67.3	189.2	57.1	22.7	67.3	33.6	66.0	40.6	Good	436.6	477.6	99.8	23.6	76.2	12.1
18	15.4.66	do.	ca. 8½ years	♀	231.8	134.6	64.8	194.9	63.5	23.5	67.3	43.2	50.8	41.9	Good	535.2	551.1	120.2	23.6	96.6	11.0
20	25.4.66	do.	ca. 8½ years	♀	233.7	139.7	66.0	193.9	71.1	27.9	75.6	30.5	73.7	48.9	Good	532.5	548.4	119.7	24.5	95.2	14.3
22	26.4.66	do.	ca. 8½ years	♀	229.2	137.2	67.3	192.4	66.7	25.4	82.5	53.3	65.4	33.0	Good	514.4	529.8	112.5	22.7	89.8	12.7
34	12.5.66	do.	ca. 8½ years	♀	236.2	139.1	66.0	204.5	69.2	24.8	76.8	52.1	59.7	43.2	Good	545.7	562.0	137.9	22.7	115.2	13.1
63	4.7.66	do.	ca. 8½ years	♀	245.1	149.9	71.1	198.7	81.3	25.4	87.6	57.1	78.7	48.3	Good	584.7	602.4	134.3	29.0	105.2	16.9
67	7.7.66	do.	ca. 8½ years	♀	234.3	132.1	69.8	196.2	78.6	23.5	79.4	59.7	57.1	31.7	Good	518.5	533.9	101.6	19.9	81.6	13.1
71	18.7.66	do.	ca. 8½ years	♀	246.4	149.9	72.4	205.7	81.3	25.4	86.4	63.5	68.6	40.6	Fair	558.8	575.6	137.9	25.4	112.5	19.0
76	19.7.66	do.	ca. 8½ years	♀	231.1	134.6	64.8	203.2	55.9	23.5	81.3	66.7	54.6	33.0	Good	537.5	533.8	143.3	18.1	125.2	16.0
80	21.7.66	do.	ca. 8½ years	♀	241.3	134.6	68.6	205.7	68.6	25.4	71.1	45.7	58.4	33.0	Good	613.7	632.3	129.7	25.4	104.3	14.5
81	2.8.66	do.	ca. 8½ years	♀	237.5	137.2	67.3	187.3	55.9	22.7	78.7	48.3	67.3	47.0	Fair	417.3	438.1	72.6	16.3	56.2	8.5
82	2.8.66	do.	ca. 8½ years	♀	240.0	132.1	69.8	200.7	71.1	23.5	72.4	31.7	71.1	37.5	Good	581.1	598.3	130.6	22.7	107.9	14.6
91	15.8.66	do.	ca. 8½ years	♀	223.5	134.6	68.6	186.0	66.0	25.4	73.7	40.0	63.5	41.9	Good	471.3	485.3	115.6	21.8	93.8	15.0
93	15.8.66	do.	ca. 8½ years	♀	236.2	142.2	69.8	199.4	67.9	25.4	78.3	44.4	61.0	38.1	Good	592.4	610.3	111.6	25.4	146.1	15.4
96	16.8.66	do.	ca. 8½ years	♀	234.9	139.7	69.8	198.7	72.4	23.5	76.2	53.3	66.0	53.3	Good	520.3	535.7	134.3	23.6	110.7	13.5
3	18.3.66	Adults over 15 years old	Over 15 years old	♀	240.0	139.7	66.0	188.0	66.0	26.7	86.4	57.1	66.0	39.4	Good	552.0	568.8	154.2	27.2	127.0	14.5
6	28.3.66	do.	ca. 9½ years	♀	240.0	133.3	66.0	194.9	67.3	24.1	83.8	40.6	72.4	35.6	Good	618.2	636.8	130.6	25.4	105.2	14.3
16	13.4.66	do.	ca. 9½ years	♀	228.6	140.9	69.8	191.8	73.7	22.9	71.7	50.2	57.1	50.8	Good	517.1	532.5	119.7	26.3	93.4	15.0
37	23.5.66	do.	ca. 9½ years	♀	237.5	140.9	68.6	186.7	70.5	22.2	One horn lost		78.7	38.1	Poor	454.0	467.7	102.5	23.6	78.9	12.7
46	7.6.66	do.	ca. 9½ years	♀	226.1	139.1	67.9	187.3	67.9	22.9	76.2	37.5	74.9	48.3	Good	497.1	512.1	112.5	23.6	98.9	14.0
53	9.6.66	do.	ca. 9½ years	♀	248.9	137.2	66.0	201.9	67.9	24.1	87.6	74.4	71.1	52.9	Fair	588.8	606.5	152.4	22.7	129.7	22.1
54	9.6.66	do.	ca. 9½ years	♀	236.2	142.2	67.3	196.8	66.0	27.9	73.7	50.8	72.4	53.3	Fair	547.5	563.8	111.6	25.4	86.2	10.2
74	19.7.66	do.	ca. 9½ years	♀	215.9	132.7	66.7	196.2	69.2	23.5	80.6	52.1	66.7	41.3	Good	468.6	482.6	117.9	18.1	99.8	14.1
98	16.8.66	do.	ca. 9½ years	♀	241.3	143.5	70.5	200.7	72.4	23.5	One horn lost		58.4	40.6	Good	541.6	312.4	143.3	22.7	120.6	20.0

EAN READINGS FOR VITAL STATISTICS OF 100 CAPE BUFFALO REPRESENTATIVE OF THE CROCODILE BRIDGE POPULATION IN THE KRUGER NATIONAL PARK.

Relative age group of sample.	Estimated age of sample.	Number of animals in sample.	Sex.	Measurements (centimetres). Body. Body length.	Shoulder height.	Elbow height.	Chest girth.	Tail length.	Ear length.	Horn. Widest span.	Tip-to-tip.	Length along curve.	Circumference around base.	Weight readings (kilograms). Total body weight minus fluid loss	Total body weight corrected for fluid loss (+ 3%).	Weight of stomach plus contents.	Weight of stomach without contents.	Weight of stomach content (wet).	Weight of dried stomach content.	Estimated daily dry food consumption.
uckling calves	5-9 months	3	♂	143.3	87.4	55.1	112.2	44.7	17.3	27.4	27.4	10.4	15.0	109.1	112.6	20.4	3.6	16.8	2.0	1.0
'Infants'	5-7 do.	5	♀	133.1	84.8	51.8	104.9	41.4	16.5	19.0	19.0	6.8	13.2	81.3	85.4	10.7	2.5	8.2	1.2	0.6
uveniles	16 months	1	♂	194.3	111.8	61.0	157.5	63.5	22.9	54.6	41.9	45.7	38.1	281.2	283.0	64.4	12.7	51.7	6.9	3.4
do.	14-18 months	5	♀	185.7	120.1	63.7	156.2	57.1	21.8	43.2	26.4	35.6	28.4	280.2	287.4	66.0	11.0	55.1	8.1	4.0
2 Year old sub-	2-2½ years	3	♂	207.0	118.6	62.5	173.0	70.6	22.3	62.7	33.3	64.8	55.4	343.6	354.4	83.6	13.0	70.6	9.7	4.8
adults	2-2¼ years	3	♀	193.5	123.7	66.0	163.1	66.0	21.3	50.0	30.7	43.2	32.2	405.1	326.3	74.7	14.1	60.6	8.7	4.3
3 Year old sub-	3-3½ years	5	♂	216.4	130.3	68.1	182.1	66.8	23.6	72.1	33.8	80.0	62.0	422.0	434.7	94.0	16.5	77.5	11.8	5.9
adults	ca. 3¼ years	2	♀	210.6	128.8	67.6	179.1	62.5	24.4	66.0	34.5	62.2	35.8	405.1	417.3	86.2	16.3	69.8	10.9	5.4
4 Year old young	4-4½ years	6	♂	235.7	135.6	69.8	194.8	70.9	24.1	82.3	46.5	89.9	70.3	493.5	508.2	101.9	19.2	82.7	12.1	6.0
adults	4¼-4½ years	3	♀	226.8	130.3	67.3	193.0	67.3	24.6	70.6	48.8	61.0	40.9	485.2	499.9	110.1	18.5	91.6	14.4	7.2
5 Year old young	5-5½ years	4	♂	236.0	135.9	70.3	195.1	68.8	23.9	86.4	47.5	89.7	68.8	523.7	539.5	120.6	21.5	99.1	12.8	6.4
adults	5-5¼ years	6	♀	223.3	131.1	67.3	187.2	68.3	24.1	68.8	43.9	61.7	40.1	453.8	467.7	102.2	21.0	81.2	11.5	5.8
Adults — 6-7 years	ca. 6-7 years	6	♂	245.9	139.9	69.8	204.0	72.4	25.9	88.9	46.7	96.8	72.4	572.8	589.9	121.1	22.4	98.4	13.6	6.8
old	ca. 6-7 years	5	♀	231.6	135.9	68.6	194.8	66.3	23.9	73.4	46.5	62.5	41.6	498.0	512.9	115.9	19.8	96.2	14.4	7.2
Adults ca. 8-15 years	ca. 8-15 years	13	♂	252.0	143.5	70.6	205.2	70.6	24.9	91.9	63.0	93.0	72.9	625.0	643.8	128.3	22.7	105.6	15.2	7.6
old	ca. 8-15 years	15	♀	234.4	137.7	68.3	196.3	67.8	24.6	76.7	48.0	64.0	40.9	532.4	548.4	124.5	23.0	101.5	14.0	7.0
Adults over 15 years	Over 15 years	6	♂	260.6	148.3	70.6	214.4	75.7	24.6	100.6	69.3	97.0	75.9	696.8	717.6	136.8	25.7	111.0	16.8	8.4
old	Over 15 years	9	♀	234.9	138.9	67.5	193.8	69.1	24.1	80.0	51.6	68.6	44.4	531.7	547.6	128.3	23.9	104.4	15.0	7.5
		Mean average for total population sample.												475.51	489.89	104.82	19.12	85.69	12.29	6.12

TABLE 2.

REPRODUCTION DATA FROM A GROUP OF 53 FEMALE BUFFALO REPRESENTATIVE OF THE CROCODIILE BRIDGE POPULATION IN THE KRUGER NATIONAL PARK, MARCH TO AUGUST, 1966.

Serial No.	Date.	Relative age group of specimen.	Estimated age of individual.	REPRODUCTIVE STATE OF INDIVIDUAL: Pregnant.	Lactating.	Non-pregnant Non-lactating Oestrus.	Non-pregnant Non-lactating Anoestrus.	OBSERVATIONS REGARDING OVARIES: Primary and growing follicles present.	Graafian follicles present.	Corpus luteum of non-pregnancy present. L.	R.	Corpus luteum of pregnancy present. L.	R.	State of uterus.	STATE OF MAMMARY GLANDS: Number of mammae.	Non-lactating (resting).	Actively lactating.	Transitional.	OBSERVATIONS REGARDING FOETUS: Number of foeti.	Site of implantation of foetus. L.	R.	Sex.	Approximate size.	Abnormalities.	REMARKS (General).
72	11.5.66	Suckling calves 'Infants'	ca. 5 months	—	—	—	+	+	—	—	—	—	—	Immature	4	Immature	—	—	—	—	—	—	—	—	None.
73	11.5.66	do.	ca. 4 months	—	—	—	+	+	—	—	—	—	—	do.	4	do.	—	—	—	—	—	—	—	—	None.
49	7.6.66	do.	ca. 7 months	—	—	—	+	+	—	—	—	—	—	do.	4	do.	—	—	—	—	—	—	—	—	None.
58	22.6.66	do.	ca. 4 months	—	—	—	+	+	—	—	—	—	—	do.	4	do.	—	—	—	—	—	—	—	—	Calf still suckling.
70	8.7.66	do.	ca. 5 months	—	—	—	+	+	—	—	—	—	—	do.	4	do.	—	—	—	—	—	—	—	—	None.
10	30.3.66	Juveniles	ca. 18 months	—	—	—	+	+	—	—	—	—	—	Immature	4	Immature	—	—	—	—	—	—	—	—	Fairly large developing follicles in ovaries.
14	12.4.66	do.	ca. 16 months	—	—	—	+	+	—	—	—	—	—	do.	4÷2	do.	—	—	—	—	—	—	—	—	Fairly large developing follicles in ovaries.
43	26.5.66	do.	ca. 14 months	—	—	—	+	+	—	—	—	—	—	do.	4	do.	—	—	—	—	—	—	—	—	Fairly large devoloping follicles in ovaries (only in one ovum)
40	5.8.66	do.	ca. 16 months	—	—	—	+	+	—	—	—	—	—	do.	4	do.	—	—	—	—	—	—	—	—	Fairly large developing follicles in ovaries.
100	17.8.66	do.	ca. 18 months	—	—	—	+	+	—	—	—	—	—	do.	4	do.	—	—	—	—	—	—	—	—	Fairly large developing follicles in ovaries.
4	18.3.66	2 Year old sub-adults	ca. 2 years	—	—	—	+	+	—	—	—	—	—	Maturing	4	Maturing	—	—	—	—	—	—	—	—	Ovaries with large developing follicles approaching puberty.
24	28.4.66	do.	ca. 2½ years	—	—	—	+	+	—	—	—	—	—	do.	4	do.	—	—	—	—	—	—	—	—	Ovaries with large developing follicles approaching puberty.
73	18.7.66	do.	ca. 2½ years	—	—	—	+	+	—	—	—	—	—	do.	4	do.	—	—	—	—	—	—	—	—	Ovaries with large developing follicles approaching puberty.
26	29.4.66	3 Year old sub-adults	ca. 3½ years	—	—	—	+	+	—	—	—	—	—	Mature	4	Mature	—	—	—	—	—	—	—	—	Ovaries with large follicles. Animal about sexually mature.
72	18.7.66	do.	ca. 3½ years	—	—	—	+	+	—	—	—	—	—	do.	4	do.	—	—	—	—	—	—	—	—	Ovaries with large follicles. Animal about sexually mature.
28	9.5.66	4 Year old young adults	ca. 4½ years	—	—	+	—	+	+	+	—	—	—	Progravid phase	4	Mature	—	—	—	—	—	—	—	—	May have had a calf already.
68	8.7.66	do.	ca. 4½ years	—	—	—	+	+	—	—	—	—	—	Mature resting	4	do.	—	—	—	—	—	—	—	—	Have not had her first calf.
86	4.8.66	do.	ca. 4½ years	+	—	—	—	+	—	—	—	Present		Gravid	4	do.	—	—	1	—	+	♂	ca. 35 cm.	Nil	First calf of this cow.
5	28.3.66	5 Year old young adults	ca. 5½ years	+	—	—	—	+	+	—	—	Present		Early gravid	4	Mature	—	—	1	+	—	Indet	ca. 11 mm.	Nil	Earliest stages of pregnancy.
11	1.4.66	do.	ca. 5 years	—	—	—	+	+	+	Present		—	—	Mature resting	4	do.	—	—	—	—	—	—	—	—	Mating season in full swing.
12	1.4.66	do.	ca. 5½ years	+	—	—	—	+	+	—	—	Present		Gravid	4	—	—	+	2	+	+	Indet	ca. 17.5 mm.	Nil	Embryo in left horn in state of resorption.
31	11.5.66	do.	ca. 5½ years	—	+	—	—	+	—	—	—	Present		Mature resting	4	—	+	—	—	—	—	—	—	—	Mother of calf No. 33.
36	23.5.66	do.	ca. 5½ years	—	—	—	+	+	—	—	—	—	—	Not fully mature	4	Not fully mature	—	—	—	—	—	—	—	—	Dwarf. Does not appear to have calved yet.
64	5.7.66	do.	ca. 5 years	—	—	—	+	+	+	—	—	—	—	Mature resting	4	Mature	—	—	—	—	—	—	—	—	Dwarf. Does not appear to have calved yet.
30	10.5.66	Adults 6-7 years old	6-7 years	+	—	—	—	+	—	—	—	Present		Gravid	4	—	—	—	1	+	—	♂	—	Nil	Foetus ca. 2½ months old.
41	25.5.66	do.	do.	+	—	—	—	+	—	—	—	—	+	Early gravid	4	—	—	+	1	—	+	Indet	ca. 6.5 mm.	Nil	Has had at least one previous calf.
59	22.6.66	do.	do.	—	+	—	—	+	—	—	—	Present		Mature resting	4	—	+	—	—	—	—	—	—	—	Suckling calf No. 58.
83	2.8.66	do.	do.	+	—	—	—	+	—	—	—	Present		Mature resting	4	+	—	—	1	+	—	♀	ca. 16 cm.	Nil	Nil.
88	4.8.66	do.	do.	+	—	—	—	+	—	—	—	Present		Mature resting	4	+	—	—	1	—	+	—	ca. 19 cm.	Nil	Nil.
8	29.3.66	Adults ca. 8-15 years old	ca. 8-15 years	—	—	+	—	+	+	Present		—	—	Progravid phase	4	Mature +	—	—	—	—	—	—	—	—	Fresh corpus luteum.
18	15.4.66	do.	do.	+	—	—	—	+	—	—	—	Present		Gravid	4	+	—	—	1	—	+	Indet	ca. 20 mm.	Nil	Embryo ca. 6 week old.
20	25.4.66	do.	do.	+	—	—	—	+	—	—	—	+	—	Gravid	4	+	—	—	1	+	—	Indet	ca. 20 mm.	Nil	Embryo ca. 6 week old.
22	26.4.66	do.	do.	+	—	—	—	+	—	—	—	—	+	Gravid	4	+	—	—	1	—	+	Indet	ca. 14 mm.	Nil	Embryo ca. 5 weeks old.
34	12.5.66	do.	do.	—	+	—	—	+	—	—	—	—	—	Post partum	4	—	+	—	—	—	—	—	—	—	Suckling calf of 4-5 days old.
63	4.7.66	do.	do.	—	±	—	—	+	—	—	—	—	—	Resting	4	—	—	+	—	—	—	—	—	—	Possibly lost her calf.
67	7.7.66	do.	do.	+	—	—	—	+	—	—	—	Present		Gravid	4	+	—	—	1	+	—	♀	not measured	Nil	Nil.
77	18.7.66	do.	do.	—	±	—	—	+	—	—	—	—	—	Resting	4	—	—	+	—	—	—	—	—	—	Possibly lost her calf.
76	19.7.66	do.	do.	—	—	—	+	+	—	Present		—	—	Resting	4	+	—	—	—	—	—	—	—	—	Ovum not fertilized
79	21.7.66	do.	do.	+	—	—	—	+	—	—	—	Present		Gravid	4	∴	—	—	2	+	+	♂ ♂	ca. 22 cm.	Nil	Twins normally developed.
80	21.7.66	do.	do.	+	—	—	—	+	—	—	—	—	+	Gravid	4	+	—	—	1	—	+	Indet	ca. 3 cm.	Nil	Sex organs under-developed probably 1st pregnancy.
81	2.8.66	do.	do.	+	—	—	—	+	—	—	—	Disap-pearing		Gravid	4	+	—	—	1	+	—	♀	ca. 29 cm.	Nil	Large, well-developed foetus.
82	2.8.66	do.	do.	—	—	+	—	+	+	Present		—	—	Resting	4	+	—	—	—	—	—	—	—	—	Ovum not fertilized.
91	15.8.66	do.	do.	+	+	—	—	+	—	—	—	Present		Gravid	4	—	—	+	1	+	—	♂	ca. 24 cm.	—	Suckling calf of ca. 5 months old.
96	16.8.66	do.	do.	—	+	—	—	+	—	—	—	Disap-pearing		Resting	4	—	+	—	—	—	—	—	—	—	Suckling calf of ca. 5-6 months old.
3	18.3.66	Adults over 15 years old	Over 15 years old	—	—	+	—	+	+	Present		—	—	Progravid	4	+	—	—	—	—	—	—	—	—	Ovum not fertilized during previous oestrus cycle.
6	28.3.66	do.	do.	+	—	—	—	+	±	—	—	Present		Early gravid	4	+	—	—	1	+	—	Indet	ca. 7 mm.	Nil	Embryo not yet implanted.
16	13.4.66	do.	do.	—	—	+	—	+	+	Present		—	—	Progravid	4	—	—	±	—	—	—	—	—	—	Cow attended by two herd bulls.
37	23.5.66	do.	do.	—	±	—	—	+	—	—	—	Present		Post-partum (abortion)	4	—	—	+	—	—	—	—	—	Cow aborted	Cow aborted some 10-14 days earlier.
46	7.6.66	do.	do.	—	+	—	—	+	—	—	—	—	—	Resting	4	—	±	±	—	—	—	—	—	—	Large calf being weaned.
53	9.6.66	do.	do.	—	—	—	+	+	—	—	—	—	—	Resting	4	+	—	—	—	—	—	—	—	—	Little activity in ovaries, appear to become atrophic.
54	20.6.66	do.	do.	—	—	+	—	+	+	Present		—	—	Infected progravid	4	+	—	—	—	—	—	—	—	—	Cow possibly in oestrus.
74	19.7.66	do.	do.	—	—	—	+	+	—	—	—	—	—	Resting	4	+	—	—	—	—	—	—	—	—	Nil.
98	16.8.66	do.	do.	—	+	—	—	+	—	—	—	—	—	Resting	4	—	—	—	—	—	—	—	—	—	Suckling calf of 4-5 months old.