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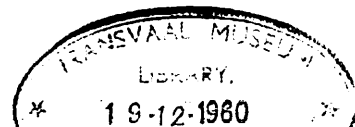
A study of the Game of the Serengeti Plains.

A record of the counting, the capture and marking of the animals; their seasonal migrations and the factors influencing these movements.

By Michael Gr z i m e k and Bernhard Gr z i m e k.

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In the Serengeti we counted the following numbers of animals (scientific names are after G. M. Allen, 1939):

Thomson's Gazelle	<i>Gazella thomsonii thomsonii</i> Günther, 1884	} 194 654
Grant's Gazelle	<i>Gazella granti robertsi</i> Thomas, 1903	
Wildebeest (Gnu)	<i>Connochaetus taurinus albojubatus</i> Thomas, 1892	99 481
Zebra	<i>Equus burchellii Boehmi</i> Matschie, 1892	57 199
Topi	<i>Damaliscus korrigum eurus</i> Blaine, 1914	5 172
Eland	<i>Taurotragus oryx pattersonianus</i> Lydekker, 1906	2 452
Impala	<i>Aepyceros melampus melampus</i> Blyth, 1866	1 717
Black Buffalo	<i>Syncerus caffer aequinoctialis</i> Blyth, 1866	1 813
Kongoni (Coke's Hartbeest)	<i>Alcelaphus buselaphus cokii</i> Günther, 1884	1 285
Giraffe	<i>Giraffa camelopardis tippelskirchii</i> Matschie, 1898	837
Waterbuck	<i>Kobus defassa raineyi</i> Heller, 1913	284
Stork	<i>Ciconia ciconia ciconia</i> Linné, 1758	178
Oryx Antelope	<i>Oryx beisa callotis</i> Thomas, 1892	115
Elephant	<i>Loxodonta africana</i> Blumenbach, 1797	60
Roan Antelope	<i>Hippotragus equinus langheldii</i> Matschie, 1898	57
Rhinoceros	<i>Diceros bicornis</i> Linné, 1758	55
Ostrich	<i>Struthio camelus massaicus</i>	1 621
		366 980

The distribution of some of the different species during the time of our census is shown in Fig. 5—9 (page 33—39).

In newspaper articles and in popular books we have found several instances where the total number of Serengeti game is put at "more than one million head". In contrast to this we found out that there are in fact only one third of that number living there. Our results are astonishingly close to Peersall's estimates of the numbers of two species (page 8 of his report). We counted 194,654 gazelles while Peersall gives "an estimated population (with an error of about 10%) of approximately 180,000". We counted 99,481 wildebeest where he estimates that their number would be "of the order 10,000 in the vicinity of Ngorongoro Crater and possibly at least ten times this number in the concentration area" (which would mean 110,000 altogether).

The estimates of hunters and tourists tend towards great exaggeration. Lindgens, for instance, writes of the Ngorongoro Crater: "In the middle of the bottom of the Crater is situated a lake which contains water the whole year, the Soda Lake. Around the lake are green plains with several hundred thousand head of game". The hunters M. Behr and H. O. Meissner (1959) state in their book, speaking of the Ngorongoro Crater; "... the many hundreds and often even thousands of elephants and rhinos reassure every friend of the animals who have feared for the game of Africa".

The actual numbers of animals in the Crater, as we show later, is less than 9,000 head, including the gazelles, with 2—3 dozen rhino and from none to three dozen elephants. These large errors, made by people without a scientific training, are the more astonishing because the bottom of the Ngorongoro Crater is an area with relatively well-defined boundaries where the animals are clearly visible from the rim and live on grassy plains where there is no vegetation to hide them. The only exception to this is that of the elephants which are often to be found in the only small patch of forest situated on side of the bottom of the crater.

Similar differences have occurred between the results of our counting of the flamingoes on Lake Natron and the estimation of the numbers made by the experienced and reliable ornithologist, Leslie Brown. We photographed 163,679 birds, while Brown, whose report is not yet published, estimated their numbers by observing them from the ground, by counting the number of nests per square yard, by flying over the breeding colonies in several directions in a normal aircraft and by computing the length and breadth of the colonies from the time taken to fly over them. In this way he estimated their number to be more than one million. However, it is true that our counts and his estimation were made at different times of year and it is not yet certain to what extent the flamingo population leaves Lake Natron to visit other lakes.

E. Different methods of capturing plains animals.

We have made full use of the possibility of following some of the large concentrations of animals over periods of several hours in one day and for several successive days and weeks during their migrations by means of the aircraft. Furthermore, by taking into account the direction and frequency of animal tracks (the patterns of which can easily be discerned from the air and which do not become obliterated by vegetation even in the rainy season), it is not difficult to ascertain the migration routes of the main concentrations by the frequent use of an aircraft.

We set great value on recognising the individual herds with certainty. In order to accomplish this we had to mark single animals of the herd in such a way as to make them visible from the aircraft and also from the ground with binoculars. In this way we would be able to establish the identity of the herd. It seemed to us to be of great importance, for other reasons, to discover a method of marking free-living large mammals in Africa and elsewhere, so that they could be re-identified after a period of time without the necessity of re-capturing them. Such a method will be invaluable for the study of the sociology of the gregarious animals, the social hierarchy, breeding behaviour and many other problems.

In order that animals may be marked in a manner which is permanent and which renders them visible at some distance they must first be caught. It might be imagined that the excitement of catching could be avoided by the adoption of some method whereby the animals are sprinkled with colouring material from a distance or by shooting at them a container of dye which bursts