

THE ECOLOGY OF THE DESERT-DWELLING ELEPHANTS, BLACK
RHINOCEROSSES AND GIRAFFES OF WESTERN KAOKOLAND AND
DAMARALAND, SOUTH-WEST AFRICA.

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by

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OBJECTIVES

In the western desert regions of Kaokoland and Damaraland in S.W.A., elephants, black rhinoceroses and giraffes survive under environmental conditions atypical elsewhere for them. These animals occupy a seemingly inhospitable desert habitat, are locally endangered and occur in small numbers. The first priority of this study is directed at the acquisition of the relevant data necessary for formulating those management and conservation strategies which will ensure the survival of these wildlife populations. Secondly, this study also aims at establishing whether these populations are ecologically discrete and restricted to the desert areas, and thirdly what adaptations to desert-living they exhibit.

REVIEW

The field work for the study commenced in June 1980 and the first three months were taken up by solving logistic problems. Prior to June 1980, background research on literature, techniques, etc., was done in Pretoria. The major field work started in September 1980, and the first observations were aimed at establishing the whereabouts, population structure and initial movements of the relevant animals. From a practical viewpoint most of the active research is concentrated on the elephant population, but data are gathered on both the giraffe and black rhinoceros populations as and when these animals are encountered. Up to December 1980, ground and aerial surveys revealed 203 elephants, 27 black rhinoceroses and 168 giraffes west of the 150 mm isohyet in Kaokoland and west of the 120 mm isohyet in

Damaraland. The structure, stability and distribution of these groups were determined as accurately as possible.

RECENT PROGRESS

The following information was obtained since December 1980, but all the results are preliminary and further research and data processing are necessary.

Status

Continuation of ground and aerial surveys indicated a total of 222 elephants, 315 giraffes and 28 black rhinoceroses in Kaokoland and Damaraland, except those in the Huab and Ugab rivers and in the eastern sandveld regions of Kaokoland. Of these only 82 elephants, 118 giraffes and 15 black rhinoceroses can definitely be regarded as restricted to the desert areas.

During the past six months, seven elephants died as a result of poaching and drought and only one new calf was born. The calf was born in January 1981 in the Hoanib river, and it is the only known calf surviving in Kaokoland in the last five years. No giraffe or black rhinoceros calves of recent birth were seen.

Movements

Movements of the desert-dwelling elephants were restricted within the same bioclimatic region and no east-west migration occurred. Seasonal movements consisted of a temporary expansion of the various home ranges and was related to additional sources of food and water following rainfall or floods from higher rainfall areas. In spite of the severe drought, these animals showed no inclination to migrate east and there seemed to be a marked attachment to their home ranges. Home ranges consisted of a high intensity utilization zone, where the elephants concerned spend 75 to 90 per cent of their time, and an exploration zone where they moved into from time to time. Movements outside the home range areas lasted from two to ten days and the the longest distance moved outside a home range was 125 km. Because of the low carrying capacity of the region, home ranges are big and vary from 40 km² to 1 800 km². Diurnal movements inside the home ranges were between 4 km and 38 km (\bar{X} = 11,75 km) and nocturnal movements between 6 km and 25 km (\bar{X} = 12,5 km). The longest known distance moved by an individual elephant in 24 hours was 70 km.

Activity

Activity patterns of the elephants followed a routine and varied only with the quantity and quality of the available food and water. The activities showed little apparent correlation with change in temperature, humidity, wind speed and direction and cloud cover. The mean percentage times spent on diurnal activity categories were: Feeding 69,7 per cent; walking feeding 4,9 per cent; walking 7,8 per cent; resting 15,8 per cent; drinking 0,4 per cent; dusting 0,9 per cent and wallowing 0,3 per cent.

Vegetation utilization

Of all the trees and shrubs surveyed in the home ranges, 7,5 per cent showed no signs of utilization; 25,12 per cent were heavily utilized; 17,24 per cent were only slightly utilized, 32,75 per cent showed medium utilization and 19,58 per cent were dead. Dead trees were caused by elephants, drought and fires. With the exception of the first 10 km around permanent water holes, the recruitment by seedlings seems to be adequate to replace the dead trees. However, bear in mind that these figures represent all old and new elephant damage for the past five years, and that the actual number of plants destroyed each year is much lower.

Feeding

Results have not yet been processed, but information to date indicates a preference for species which occur with the highest frequency, such as Colophospermum mopane and Acacia spp. Exceptions were unpalatable species such as Salvadora persica and Euclea pseudebenus. During the rainy season there was an abrupt change from browsing to grazing, and this lasted as long as grass was available. Plant and dung samples were collected on a monthly basis for laboratory analysis of nutritional values and composition.

Appraisal

This study has established the definite existence of a subpopulation of elephants which are restricted to the desert regions of Kaokoland and Damaraland, with little or no genetic exchange with eastern populations. No migration patterns could be distinguished and seasonal movements consisted of a temporary expansion of the various home ranges. Although no definite or obvious physical differences, such as size, long legs, etc., could be

discerned, this population of elephants probably represents a separate gene pool. This is evident from the tusk growth form of the bulls. The tusks of these bulls all show the same curve and angle in relation to the forehead, irrespective of length, as opposed to bulls from the eastern populations which show a variance in curve and angles, or no curves at all.

* During the past five years there has been a marked reduction in distribution and numbers of the desert-dwelling elephants and this process is continuing at a high rate. Because of the difficulties experienced in proclaiming this region as a game reserve with proper control and management, the following interim recommendations are made in an attempt to slow this decline:

1) That the Hoanib river west of Dubis waterhole be closed to all vehicle traffic and that the Department of Agriculture and Nature Conservation of S.W.A. control the movements of any vehicle in this river. This is feasible because there are no people resident in this area and it is not utilized by livestock. Traffic by various institutions and persons create an immense disturbance factor, which together with the hunting has a negative effect on the survival of the animals in this narrow gorge.

The Hoanib river can be considered as the last stronghold of the elephant, giraffe, black rhinoceros and lion populations in Kaokoland.

2) Although ANVO hunting safaries gave their assurance that they will not hunt elephants in the Hoanib river, it is felt that more concrete assurances must be obtained, and that no elephant hunting must be allowed west of the veterinary control fence. This western elephant population is at such a low level that any further reduction of the number of the prime bull elephants there may result in a similar disparity as is already evident in other areas, with grave consequences for the elephants. ANVO hunting safaries stated that they only shoot old animals, but an examination of the lower jaws of six elephants shot by them proved that these elephants were between 27 and 35 years of age. Bulls of this age are prime adult breeders.

FURTHER ACTIVITIES PLANNED

* In the next six months research will continue on the status, population structure, movements, activities, feeding, habitat utilization and various other ecological aspects of the three species being studied. Because of

the severe drought this period will provide invaluable information on the survival techniques of the animals concerned, and on the carrying capacity of the region. Monthly aerial surveys are planned for this period, and radio-tagging of at least one of the elephants will provide additional information on the movements of its associated group.

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