

WILD LIFE IN KENYA

A CONSIDERATION OF ANIMALS AND THEIR HABITATS

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It is encouraging to report that, except for some forms of less than specific rank, no animal of East Africa has become extinct and most species are still abundant. There is still time to save the interesting fauna in its natural habitat, provided reserves are chosen wisely.

The narratives of many Victorian travellers, as well as the reminiscences of "old-timers", create the impression that formerly the game of Africa "darkened the horizon in all directions". But when the missionary Krapf travelled towards Mt. Kenya, about 120 years ago, he remarked on the abundance of game only in much the same places as the traveller of to-day would see it. Livingstone, who usually relied on the resources of the country, makes special mention of the purchase of a goat as a great event after a long meatless period in Central Africa. Game could not therefore have been abundant everywhere, even in his time. Travellers in Masailand after the great rinderpest epidemic towards the end of the last century record the devastation wrought by the disease. The buffalo is instanced as having become virtually extinct in what is now Kenya. Yet buffaloes are again very abundant.

These observations stress important aspects of wild life preservation, namely that certain species thrive best in concentrations, that certain habitats are especially favourable while others are not suitable, and that the species are virile and can re-establish themselves after a disaster. Reserves should be selected with these facts in mind, and it is the purpose of this paper to describe some of the favoured types of habitat, to discuss their more important characteristics, and to indicate how the welfare of the animals might be improved.

THE UPLAND-GRASSLAND PLAINS

When people in East Africa talk about the abundance or scarcity of game they are usually referring to "plains' game". This group includes wildebeest, zebra, Coke's hartebeest, Thomson's and Grant's gazelle. The habitat of this fauna is the primary grasslands of the highlands, which is an environment well represented on the Athi and Kapiti plains, immediately south of Nairobi. Part of this now forms the Royal Nairobi National Park.

The plains lie at a mean elevation of over 5,000 feet. The soils are of volcanic origin, are badly drained and black in colour. The vegetation is an open grassland characterized by "blue oat grass", *Themeda triandra*, or by a mozaic of other perennial tussocky species. Trees are absent over most of the area but the gentle slopes are often dotted with shrubby "whistling thorns", *Acacia drepanolobium*; the occasional watercourses are fringed with "fever-trees", *Acacia xanthophloea*.

The Athi-Kapiti plains thus constitute a clearly defined environment, of which the lip of the Rift Valley forms the western boundary. This lip is also a partial faunal barrier; gerenuk, for instance, occur only to the west and wildebeest only to the east of the rift wall. Southwards the rift wall becomes less steep and many species, such as giraffe, zebra and Grant's gazelle, travel up and down the "orchard dappled" slopes.

A northern barrier to the plains' game has always been formed by the slopes of the Aberdares, north of a line between Ngong and Thika. These slopes were formerly forested but are now partially built up (Nairobi) and cultivated (coffee, sugar and sisal). The south-eastern fringe of this area, by virtue of the perennial streams draining from the highlands to the Athi, is an important "dry season concentration area".

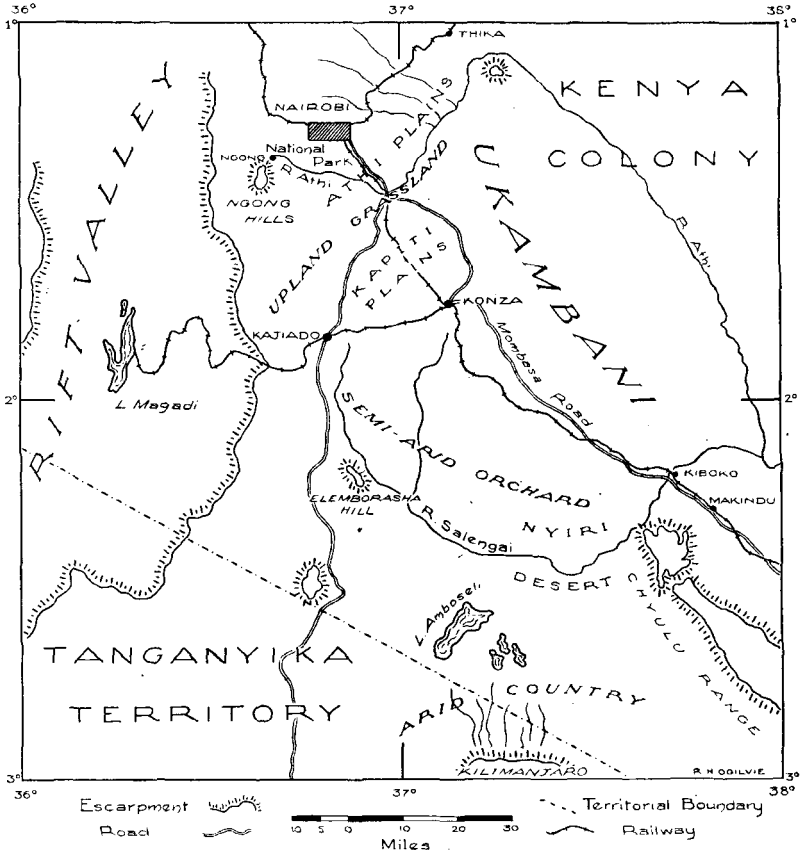
The portion of the Athi plains north-east of the Nairobi-Mombasa main road and railway line, formerly an important part of the habitat, is at the present time largely denied to game, owing to settlement, ranching, shooting and fencing. However, the highlands of Ukambani have probably always formed a fairly definite eastern boundary to the plains' animals. To the south "orchard" country, on red soil slopes, limits the plains and appears to form a partial ecological barrier to the fauna. The contact between the orchard and the open grassland is conveniently indicated by the alignment of the Kajiado railway.

In 1948 a census was made of the animals in Nairobi National Park, a dry-season concentration area, and it is interesting to compare this with a count made during the same period on the Kapiti plains, a wet-season dispersal area. In the Nairobi National Park the density per square mile of the large animals, zebra, wildebeest and Coke's hartebeest, declined from 91, 43 and 25 respectively, in September to 4, 6 and 14 in January. During the same period on the Kapiti plains their densities increased from .25, 2 and 3.5, to 12.5, 17 and 23.5.

In the process of these counts it was found that the movement of gazelles did not coincide with that of the larger animals. During the dry season they remained in the dispersal areas and

only moved into the concentration areas at the commencement of the rains. This curious alteration of the heavier game and gazelles, in their grazing requirements, appears to be a feature of some ecological importance. After it was first noticed, as a result of the counts made in the Park, it was found to occur in

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other areas as well, and it may have some survival value to the plains' game population as a whole. The gazelles do not drink and they favour short crisp herbage. Therefore they are able to exploit the dispersal areas, while these places are too waterless and the herbage too dry for the other animals. Similarly, the larger animals are relieved from the competition of gazelles in

concentration areas. When the rains fall the grasses of the dispersal areas tend to become rank and it is then that the gazelles benefit by the short, over-cropped grasses left by the larger animals as the latter vacate their dry-season concentration areas.

All the evidence suggests that the Athi-Kapiti plains form a natural unit and it is probable that no large-scale movement into or out of the area takes place during normal seasons. This important conclusion, which is supported by observation elsewhere, means that as long as a reserve includes country suitable for occupation at all seasons a population of plains' game can be preserved as a natural unit within a defined area.

During the period of maximum dispersal the distribution of game of all species worked out at seventeen acres per head. This agrees very fairly with the pasture capacity for stock and may be taken as an index of the sort of population which this type of grassland can carry. It would seem that the game which may be seen on parts of the Athi-Kapiti plains is still about as numerous as it ever was. The limiting factor to the survival of the " vast herds " of the olden days has been other claims upon the land.

THE SEMI-ARID ORCHARD

To the south of the Athi-Kapiti plains the Selangai drainage between Kajiado and Kiboko forms another complex but natural faunal unit. The variety of habitats presented makes this a relatively rich area for game, but it may be taken as reasonably representative of a wide belt of country below the highlands in Kenya.

The Selangai drainage is bounded in a northerly direction by the Kapiti plains ; easterly by the highlands of Ukambani, but with a corridor to the Athi river via the Kiboko valley. To the south the more arid conditions in the Mt. Kilimanjaro rain-shadow partially limits the distribution of the fauna. The western boundary is formed by the Great Rift Valley.

The region is one of rather open semi-arid orchard supported by a light rainfall and badly watered. The north-western and northern portion forms the catchment area and consists of rocky hills and valleys. The central and southern portion comprises a plain of " nyika " soils through the centre of which the Selangai watercourse passes. To the east and south-east lie volcanic soils characterized by open grassland.

Probably the primary vegetation of some of the catchment hills was evergreen forest, indeed relict patches may still be found, but most of the slopes are now covered with a rather open

Acacia orchard which, under the influence of erosion, heavy grazing and possibly increased aridity, is the climax type of vegetation for the area. Elsewhere the vegetation is a fire-climax, characterized by *Combretum* and other genera of trees with corky bark. The ground herbage is rather sparse; the tussocks of perennial grasses are widely spaced and possibly exhausted by the frequent fires. *Themeda* grass is often abundant or even dominant on the better soils but is absent from the more degraded parts. A great variety of other grasses is found.

In the valleys bigger trees in greater variety occur and a shady woodland fringe is found along the larger watercourses. Nevertheless, *Acacia* and other drought-resistant types predominate. The ground cover under the trees is sparse and composed largely of annuals, although there are also perennial woody herbs.

The more level areas of red soil which is derived from decomposed metamorphic rock, support an orchard of small deciduous trees, among which several species of *Commiphora* are characteristic. The ground in the orchard is quite bare during much of the year, but after rain is sparsely clothed with annual herbs and grasses. Such country is known as the "nyika" and is of vast extent over the more arid parts of Kenya. It is a monotonous region with few prominent features, in which the rainfall is sparse and irregular. Arid conditions prevail during much of the year and the area is waterless except for temporary rainwater pools. The exposed red soil is always in evidence and tall chimney-like termite castles are characteristic.

Scarcity of surface water throughout the area is probably the limiting factor to an abundant resident game population. Besides, the flocks and herds of the Masai tribesmen concentrate at all places where surface water is available, and this results in acute local competition and overgrazing.

Giraffe are characteristic of the *Acacia* woodland, this tree providing their main food. They are great hill climbers and are found all over the catchment areas in troops of a dozen or more together. Rhinoceros occur throughout but only in small numbers. Forty years ago they were reported to be very numerous; thirty years ago it was already noted that they had become scarce in the open bush, though surviving in considerable numbers in the thick bush. Poaching has been responsible for the great reduction in their numbers and for the daytime retirement of the survivors to thickets or remote places.

Elephants range up and down the watercourses, right to the uppermost tributary streams, but never reach the upland grassland plains. Their centre of distribution is in the tall riverside

fringe and, although they are dependent on access to water, they travel far through the dry "nyika". Fairly large herds may be encountered and some of the animals carry splendid ivory, but elephants are not really very abundant.

Impala are abundant along all the watercourses and they wander into the "nyika" and over the hills, in fact they may be encountered wherever there is light woodland. Dik-dik, in pairs, frequent the whole area. The lesser kudu, although rather a characteristic animal of this type of country, is scarce. Eland are relatively abundant, especially in the *Acacia* fringe, where small parties are frequently seen. They range all over the hills and far into the *Commiphora* orchard during the rains.

Zebra traverse the whole area. Although the large herds resident on the Kapiti plains do not appear to enter the orchard country during normal seasons, fairly big herds must at times travel through the country. Small parties linger wherever water and grazing are available and they may be found both in the hills and in the river fringe. Oryx move freely in small herds through the orchard but never go to the cooler and moister highlands. Coke's hartebeest is definitely scarce here and it is certain that the big herds from the Kapiti plains never go into the orchard country. Specimens from the Tsavo area have been described as *cokei*, whereas the Kapiti plains' race is *kongoni*, so it would be interesting to know if the Selangai region constitutes a sort of barrier between the two forms or if it is a zone of overlap.

Wildebeest and Thomson's gazelle cannot be considered as animals of the orchard country, but as the vegetation is not homogeneous they cannot be excluded from the fauna. Wherever there are open plains, especially round the edge of the area and below some of the foothills, they may be found in restricted numbers. Old reports (1920-21) mention concentrations of wildebeest on the watering at Bissel, near Kajiado, but there are no recent records of this occurrence. The Grant's gazelle, on the other hand, is one of the most characteristic animals of the orchard-dappled plains, where it delights to feed on the cushion grasses which sprout green after the rains. It is, however, not a hill climber. The gerenuk is resident throughout and extends into the catchment hills but never reaches the upland grassland plains. Chanler's reed buck and klipspringer are usually to be seen in small numbers on the hills, especially in the *Combretum* orchard.

The whole of the semi-arid orchard area is in the Masai reserve, which is considered by people competent to judge to be

already overstocked with cattle. The factor which above all others limits the game population is competition with domestic stock. It is particularly acute at water places, but over-grazing is noticeable throughout the area. The most urgent need is to increase the supply of surface water and to allow game priority at some of it.

THE ARID COUNTRY

A large part of northern Kenya may be included in this category, but the part selected for the present study is the relatively compact area lying in the rain-shadow of Kilimanjaro, which is, however, particularly favoured by virtue of springs along the base of the mountain.

The area is one of volcanic, chocolate-brown soils, with boulders of lava rock and plains of alluvium washed down from the Kilimanjaro massive, together with barren dusty flats of whitish soils, such as Amboseli, which are evidently the beds of former lakes. The whole country is extremely arid, but there are several springs which flow for a short distance across the plain and then feed swamps around which zones of ground-water vegetation are found. As a consequence of these varied conditions a mosaic of vegetation types occurs, among which the following are easily recognized.

An open orchard characterized by *Acacia mellifera*, the "wait-a-bit" thorn, on the chocolate-brown soils. In some places this growth tends to form thickets. Elsewhere there are knolls of lava boulders, and on these a variety of other trees are found. The trees remain bare during the long periods of drought but burst into flower and foliage after showers of rain. The ground herbage is sparse and large areas are bare, though in shallow pans perennial tussock-grasses occur, and after rains a variety of woody herbs become green.

The alluvial soils are characterized by tall, flat-topped *Acacia spirocarpa*. The country has a park-like appearance, due to the evenly spaced trees and open glades. The trees remain green during the dry season but the glades are bare of vegetation except after rain, when perennial cushion-grasses sprout and a variety of annuals come up. Along watercourses this type of vegetation thickens up into a shady woodland, but on shallower soils the trees are smaller; *Commiphora* becomes mixed with the *Acacia* and the "park" tends to merge into the "orchard" covering the vast area of "nyika" soils which have already been noted.

Of particular importance as a habitat for game are the zones

of vegetation associated with the swamps. The spring heads and little streams are shaded by yellow-barked *Acacia* and wild figs, beneath which grow rank burr-infested herbs. The swamps themselves are shallow and choked with a dense growth of sedges, including papyrus and reed mace, while little pools of water are covered with floating water-lettuce, *Pistia stratiotes*, and the water fern, *Azolla*. Coarse tussock-grasses, *Sporobolus robustus*, are characteristic of the shore line. During seasons of heavy rains the swamps may flood over large tracts of country where dense stands of a shrubby *Sesbania* and a rich pasture of star-grass, *Cynodon dactylon*, are characteristic.

The white soil pans are thinly covered by wiry *Sporobolus spicatus*, which provides fairly good pasturage. Both the dry pans and the swamp areas are enclosed by open groves of yellow-barked fever trees, *Acacia xanthophloea*, with which are associated wild date palms.

Probably the gerenuk, which is never abundant, is the only species strictly resident in the " *Acacia mellifera* orchard " and similar arid formations. Giraffe, Grant's gazelle, and oryx certainly range through the area in small numbers at all seasons. The rhinoceros treks long distances through the arid country in order to visit rocky knolls where it feeds on various succulent plants, though its numbers cannot be very great.

The *Acacia spirocarpa* park, by virtue of the perennially green foliage of the trees, provides a permanent food supply for browsing animals. Consequently giraffe, impala, elephant, and rhinoceros are resident in the area. The annual ground herbage which grows after rains is particularly attractive to gazelles, and at the same time zebra, eland and oryx visit the parkland.

The zones of vegetation associated with the springs and swamps provide the main habitat for buffalo, waterbuck, *Kobus ellipsyprymnus*, hippopotamus and bohor reedbuck. Large herds of zebra and wildebeest frequent the watering-places during the dry season, the former finding grazing on the *Cynodon* and the latter on the *Sporobolus* plains.

Throughout the arid country there is a marked concentration of animals in favoured environments and evidence that if the availability of surface water could be increased, more of the habitat would be populated.