

**WILD LIFE IN TANGANYIKA**

A CONSIDERATION OF ANIMALS AND THEIR HABITATS

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A study of the vegetation map of Tanganyika, Gillman, 1949, reveals three main plant associations. In the northern division the predominating vegetation is bush and thicket, wooded grassland and grassland. Here much *Acacia* country and scenery reminiscent of Kenya will be found. The other divisions are the western and south-eastern where the familiar catena—woodland, wooded grassland, valley grassland—is repeatedly represented.

In 1936 Swynnerton published a map showing that there is a marked extension of typical Kenya plains game—wildebeeste, Coke's hartebeest, gazelles, ostrich—into the area of the central northern type of vegetation, while in the western and south-eastern zones the characteristic animals are Lichtenstein's hartebeest, which is not found in Kenya, and sable antelope, which is very restricted there.

This association of the fauna with the vegetation must be borne in mind when considering the wild life of Tanganyika, since it is only the northern, or Kenya, type of fauna which has ever occurred in vast easily observed concentrations. The woodland fauna has always been dispersed and less easily seen. Indeed the northern plains fauna is separated from the very similar southern plains fauna, formerly the pride of South Africa, by a great belt of country in which many types are completely absent. Nevertheless many species span the gap and it is important to see how the very varied habitats represented in Tanganyika influence their distribution and welfare.

The Eyasi-Wembere depression is an area of closed drainage running about 200 miles south-westwards from Lake Eyasi. The southern part, the Wembere, is a vast plain of valley grassland with flood-plain and saline lake-shore species represented; it is fringed with open *Acacia* or deciduous woodland and enclosed by rather low eastern and western escarpments. About the middle of the trough the drainage culminates in a shallow saline lake, Lake Katingiri; though at times the flood water is carried by the Sibiti river towards Lake Eyasi, which itself is usually dry. The northern portion comprises an arid steppe with patches of deciduous orchard containing many succulent elements. It surrounds the barren saline flats of Eyasi and lies below escarpments of considerable elevation.

The whole area is subject to extremes of drought and flood. The southern and central part becomes extensively flooded during certain seasons, but only the part around the so-called Lake Katingiri has any degree of permanent water. The northern part, although it receives the overflow from the rest of the area, is usually excessively arid. It is interesting that originally the drainage certainly flowed the other way and that Lake Eyasi must then have received water from the highlands to the north. Probably Eyasi was at that time a lake of great size and emptied towards the south along the Wembere river. This in turn flowed to the south-west through the Nyahua mbuga to the Wala river, which is a tributary of the Ugalla, and so is Congo water. The ancient course can be traced as a series of valley grassland strips which are of considerable importance in game distribution.

Much of the Wembere area is occupied by settled herdsmen whose vast flocks of cattle, sheep, goats and donkeys have so reduced the herbage that in many places nothing remains except sheet-eroded wind-swept soil. Other portions are too flooded during the rains and too waterless at other times to be frequented by stock. This area forms a corridor along which several northern animal species find their most south-westerly extension. Wildebeest and Thomson's gazelle are quite common, the latter almost reaching Latitude 5° S. Grant's gazelle and Coke's hartebeest are also reported. All these species are probably partially migratory, so their number is likely to vary from season to season. The ostrich is well represented but is rare further west in the Ugalla drainage.

Zebra are frequent throughout and dikdik very common, the latter extend to the Ugalla drainage though not to the north Rukwa. Bohor reedbeek, which are so common in Rukwa, are not frequent in Wembere, though they occur in the denser type of flood-plain grassland formation around Lake Katingiri. Topi are absent. Hippopotamus also appear to be absent, which is probably due to the droughts and the ease with which hippo can be slaughtered during them. Rhinoceros occur in the Eyasi portion but are not found south-westwards. Elephants occur throughout but not in great numbers. Giraffes are frequent in the *Acacia* woodlands and parklands and extend down the Ugalla drainage to the Rukwa. The lesser kudu is common in the deciduous woodland fringing the open plain but has not been noticed further to the south-west.

No census of the fauna in the area has been attempted but the general impression was that the game population of the

open plains is very low. This may be due to molestation by the big African population but more probably to the excessive competition with domestic stock over all the better watered parts. The great extremes of climate must also be taken into consideration.

The stock-carrying capacity of the Wembere basin could certainly be improved by wells or boreholes, but the area does not appear to offer much promise as a wild life reserve.

*Woodland and Valley Grassland.*—Throughout the woodland areas of Tanganyika and Northern Rhodesia the monotony of the vegetation is relieved by an easily recognized series associated with the drainage. Woodland is established on the raised ground, wooded grassland on the lower slopes and grassland in the less well drained valleys.

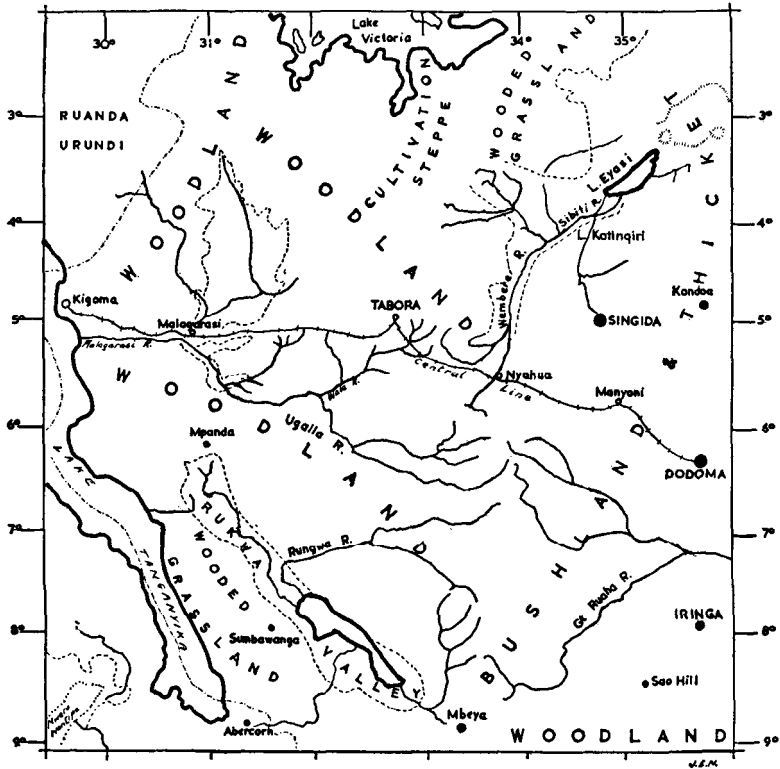
The quality of the pasture of the valley grassland is subject to great seasonal variation. In general it may be classed as "sour". That is to say the young growth is attractive but the old growth is unsuitable for grazing. A single wet period alternates with a single dry period each year. Rains are expected from about November to April while the remaining six months are dry. During the dry period surface water becomes scarce and grass fires sweep through most of the country. After burning, the perennial grass-tussocks produce fresh green growth, without the incidence of rain. Animals grazing on this green herbage do not require to drink.

The sable antelope is the most characteristic animal of the woodland. It is never found in the vast open plains associated with impeded drainage, but it is found in the partially shaded groves and open glades where wooded grassland borders belts of valley grassland. Sable live in herds of a couple of dozen or so, a single bull attended by females and juveniles. They seek shade during the heat of the day and graze when it is cooler.

The roan antelope is commoner than the sable and more widespread. Though troops of up to three dozen may be seen grazing on open plains during the cooler parts of the day, the roan is not really an animal of open plains and usually retires to the shade of trees when not feeding. Roan are very frequently seen in the woods, especially those parts which lie in the vicinity of valley grasslands. Lichtenstein's hartebeest also lurks in the woods and feeds in the grassland when the herbage is short and sweet, but it seldom remains in the open for long.

Eland are much greater travellers than any of the foregoing. Herds of several dozen individuals may appear for a period and then be absent for months. There seems to be no regularity

## DRAINAGE OF CENTRAL TANGANYIKA.



about their visits though they naturally linger where the grasses are suitable for grazing. While they are on the grass plains they may spend their whole time in the open, but while they are on trek may be encountered anywhere in the woods. As with all the larger antelopes, lone males may be found remote from any of their kind, though they may join up for a time with other species.

The zebra is an animal of the open country. Small troops of a dozen or so frequent the larger plains and linger there as long as the pasture is good or water available. Though zebra on trek may be encountered in the woods, woods cannot be

considered a typical habitat for them and for this reason large areas are unfrequented.

In the woodlands visibility is limited and it has not been possible to make a census of the game population. Although many miles may pass without any animals being seen, there are few parts where tracks cannot be found. In 1952 Potts and Jackson estimated ten large animals per square mile as a fair average for the bushed areas of Tanganyika and Northern Rhodesia, and this certainly seems a reasonable figure.

The Ugalla drainage particularly favours a large game population due to the extent of wooded grassland, termite-mound thicket with grassy glades, and palm-stand grassland, also to perennial water in the Ugalla river. Some animal counts have been attempted in this area and the following is an example: During a traverse of 44 miles along the river a total of 213 animals were seen, namely, warthog 49, sable 47, impala 28, hippo 28, topi 20, waterbuck (defassa) 11, Lichtenstein's hartebeest 8, giraffe 7, reedbuck 6, bushbuck 6, oribi 2, lion 1. This works out at twenty head per square mile or 32 acres to the beast. Due to restricted visibility only some of the animals present were recorded and several species which exist in the area were not seen at all, for example zebra, buffalo, roan, and eland. The estimate is therefore on the low side, but the game population is evidently comparable to that of plains game during wet season dispersal and very similar to that of the semi-arid orchard environment.

Elsewhere the valley grasslands are not so favoured and many areas are not fully occupied, even where the pasture appears to be good. It is certain that this scarcity of game is caused by African hunters, to whose activities three factors contribute. Firstly, domestic stock cannot be kept because of tsetse fly and so the human population is starved of meat; secondly, large numbers of muzzle-loading firearms are in use, and to the slaughter caused by these weapons must be added the large number of animals which get away wounded. Thirdly, the relatively restricted and enclosed pastures and watering places, make ambushing or netting of game a profitable method of hunting.

The greatest need for the welfare of game in the woodland-valley grassland habitat is control of African hunters.

*The Flood-plain Grassland.*—The vast grasslands associated with impeded inland drainage provide an important area for permanent occupation by game. These grasslands are essentially similar to the valley grasslands already described, but on such

a big scale that they provide an environment which can profitably be studied by itself.

The plateau of interior Africa, especially in the vicinity of the Rift disturbance, is characterized by lines of impeded or even completely closed drainage, in which the vegetation occurs in easily recognized zones. The hills enclosing the great plains are covered with light woodland, with species of *Brachystegia*, the most usual trees. Along the lower slopes the woodland-grassland formation predominates. This is more open country where small trees, chiefly species of *Combretum* and *Terminalia*, are widely spaced in a sea of long grasses, through which hot fires pass during the dry season. When the country levels out, especially where alluvial soils are laid down by the rivers, *Acacia* woods are found. The valley floor is level, badly drained and subject to flooding. Here the soil is black and sticky when moist, but becoming as hard as concrete when dry. The vegetation of these plains is open grassland.

There is some evidence that the existence of these grasslands depends on fire, but even if this is so, fire is so prevalent that it must be accepted as a natural phenomenon, and the grassland regarded as a stable environment. The grasses are long, 4 to 8 feet, and dense; the various species occur in zones, some of them covering great areas as pure stands.

Around the perimeter of the plains, Rhodes grass, *Chloris gayana*, and species of *Hyparrhenia* are characteristic. In the easily flooded basins dense beds of *Echinochloa pyramidalis* occur; in the wetter parts, water grasses or even permanent swamps dominated by *Cyperus papyrus* may be found. Where there is no outlet, flood water accumulates and forms shallow saline lakes around which zones of other grasses occur, such as *Sporobolus robustus*, 6 to 8 feet, and *Sporobolus spicatus*, 2 feet.

The whole environment is subjected to extremes of flood and drought. During half the year the plains are covered with a dense growth of grass, and during the other half they may be a fire-scorched wind-swept wilderness.

*The Rukwa Valley*, in south-western Tanganyika, is a typical area of closed flood-plain grassland and as this valley is a wild life reserve it will be interesting to examine it in some detail.

The valley is bounded to the east and west by an escarpment. The northern end is lightly wooded with *Acacia spirocarpa* parkland, or with other types of woodland grassland in which the characteristic trees are species of *Combretum* or *Terminalia*. The southern end of the valley is bounded by a brackish lake which lies below rising ground clothed with *Brachystegia* wood-

land. Within these boundaries there are extensive plains of valley grassland and a large shallow extension of the southern lake which is liable to dry up and leave a barren desert. The whole area forms a faunal unit.

The game is by no means evenly distributed, but certain areas are regularly occupied. The grasslands may be divided into long grass and short grass formations. Typical long grass stands are composed of *Echinochloa pyramidalis* in the flooded basins, though short mats of *Cynodon dactylon* and *Cyperus* sp. often occur within the stand. During the rains the perimeter grasslands of the flood-plain support long grasses on the genera *Hyparrhenia*, *Chloris*, *Sporobolus*, *Eragrostis*, etc., and a zone of tall *Sporobolus robustus* may usually be seen around the saline lake. All these long grasses get burnt during the dry season and in the early stages of regrowth these areas resemble short grass plains. They are then occupied by game which later shuns them.

The short grass plains are found in the *Acacia* ground water parkland and its vicinity, where annual cushion-grasses and *Sporobolus* sp. are characteristic, on the deltas of the rivers where *Cynodon dactylon* lawns are extensive and along the lake shore where *Diplachne fusca* or *Sporobolus spicatus* mat is found. These areas support the largest game population.

The most abundant species in the valley is the topi, which here reaches the southern limit of its range and congregates in large herds. Two to five hundred may be seen together in favoured places which appear to be occupied continuously throughout the year. Lone males and small parties of a few dozen may spread out over the plains to exploit green flushes of growth following fires, but the recognized stamping grounds form the centre of their distribution. In the five best known stamping grounds there are altogether about 1,500 topi.

Stamping grounds vary in size from one to several square miles and are found in a zone of transition vegetation between the *Chloris* stand and the established lake-shore grassland. They serve to some extent as a wet season concentration area and there is some indication that the game itself, by continued grazing and trampling, helps to keep the herbage suitable. Fighting and mating occur during the rutting season. There are also latrine patches which the animals visit regularly, a fact well known to hunters who dig "fox holes" beside them. Shallow rainwater pools are characteristic.

Zebra concert with topi in the area but also favour the *Sporobolus spicatus* mat on the lake shore. One herd of 200



and three others of 100 each are known, probably accounting for half the zebra population in the 500 square miles concerned.

The characteristic animal of the flood-plain grassland, *Echinochloa-Cynodon-Cyperus* mozaic, is the bohor reedbeek. It is found either singly or in pairs, sometimes with a juvenile. During the dry season there may be concentrations of a dozen or so on patches of fresh grass, but these are not really flocks, for when alarmed the individual animals break away in different directions. Along a traverse representing 4 square miles forty bohor reedbeek were counted, i.e. a density of ten per square mile or 60 acres per head, probably a reasonable density for the species. The true reedbeek, *arundinum*, has never been seen in the area, though it occurs in the valley grassland in the neighbourhood.

Eland visit the valley but though they may stay for long periods are not resident. While on the plains they occupy the same areas as topi and indeed usually accompany them. The eland population has suffered at the hands of hunters and, even in the valley reserve, eland are still a prize for the poacher. The largest herd encountered was forty-two animals, of which twenty were juveniles; usually lone bulls or small parties were seen.

The distribution of the Lichtenstein's hartebeest is peculiar. Although a species of light woodland it is very frequently encountered on the flood-plain grassland, when the herbage is fresh and short after fire. Indeed, in the Mweru-wa-Ntipa in Northern Rhodesia, where the topi is not found, it is the commonest antelope of the plains. It is also common on the extensive flood-plains associated with the Malagarasi drainage in western Tanganyika and even in the northern part of the Rukwa rift, but on the plains around Lake Rukwa it is rare.

Impala are restricted to the *Acacia* parkland fringe from which they wander out to the short grass plains in the immediate vicinity. The population is small and probably amounts to only a few hundred.

Giraffe frequent the northern end of the Rukwa rift but in the area under review they are restricted to a small area on the edge of the *Acacia* parkland bordering the north Rukwa plains. Here up to two dozen are resident. The Rukwa seems to be the southern limit of the race *tippelskirchi*.

Perhaps 500 buffalo are resident on the flood-plain, particularly favouring the dense stands of *Vossia cuspidator* grass which choke the water channels. The herds benefit by the green flushes of pasture which come up after fires and wander freely



through the perimeter woodlands, but their range is always limited by the accessibility of water.

The Rukwa herds of elephant usually consist of only a few dozen individuals, though to the north of the area, but still in the Rukwa rift, a herd of 120 was seen in the flood plain. Here *Vossia* was the dominant grass.

Hippopotamus are abundant but in periods of drought suffer greatly. During the dry season of 1949, for instance, when the Rungwa river dried up completely the population was dispersed and many died. About three dozen survivors found an uncertain sanctuary in a pool in the centre of Rungwa village, where they were tormented by missiles thrown by idle villagers, though their actual slaughter was fairly effectively controlled by legislation. But after the rain of 1951 hippopotamus returned to most of their previous haunts. In 1953 it was estimated that the hippopotamus population of the 10 miles of the Rungwa river which crosses the north Rukwa plains was at least 300, including many juveniles.

In the Rukwa puku are restricted to the lake shore plains in the vicinity of river mouths, where they may be seen in small scattered parties. On the delta of the Momba river a hundred or so may be in sight at once. They seem to choose freshwater flooding since they are normally found neither along the lake coast where the water is brackish, nor in the flood-plain grassland. Due to its rather narrow requirements the species is not very abundant but appears to be in a thriving condition.

An estimate of the animal population of the 500 square miles of the northern and central plains is: topi 3,000, bohor reed-buck 5,000, zebra 1,000, hippopotamus 500, buffalo 500, puku 500, impala 300, eland 100, Lichtenstein's hartebeest 50, say 8,000 head of the commoner species, giving sixteen animals to the square mile or about 40 acres each. This is a low figure but during much of the year a great deal of the long grass is unsuitable for many of the species.

The valley is a controlled area and it is believed that African hunting is not on a large enough scale seriously to limit the game population. There is no competition with domestic stock. Lion and hunting dogs are not common. Fire incidence is likely to be beneficial rather than the reverse. During the periodical droughts there is remarkably little evidence of undue pressure of population at water-holes. In fact the Rukwa valley offers an intact environment for its game animals and the existing population seems to be in a satisfactory state.