

## GAME AND TSETSE FLY IN SOUTHERN RHODESIA

Until nearly the end of the nineteenth century about two-thirds of Southern Rhodesia was uninhabitable by domestic cattle, and thus, to a great extent, unusable by mankind whether European or native, because of the disease trypanosomiasis. In man this is called sleeping sickness, in cattle nagana. It is caused by trypanosomes, minute organisms which live in the blood of the victims of the disease. These trypanosomes are sucked up, with the blood of the infected man or beast, by blood-sucking tsetse flies, develop in the fly and may be transmitted to the next creature on which the fly feeds.

All tsetses live only on blood, but the kind of blood which they need and the sort of country in which they can live, varies greatly among the twenty-two different species. Some can live, at least partially, on birds and reptiles, others must have mammalian blood. All tsetse require shade but some kinds live by the waterside, some in deep forest, some in bush country. Failure to realize these very important differences between tsetse flies has, in the past, caused much misunderstanding of the methods used in fighting them.

In Southern Rhodesia the only tsetses of importance are the "bush" flies, *Glossina morsitans* and *Glossina pallidipes*; and this article refers to these only. The fly is a woodland creature which must have cover; it cannot live on open grasslands. The natural food of the fly is the game animals of Africa. In the term "game" must be included the warthog, for these animals are a favourite food of the fly. Surprisingly, baboons do not seem to be fed upon. Although the blood of the wild game carries the trypanosome, the disease nagana does not develop in wild game; only domestic animals are affected. Sleeping sickness is not a great problem in Southern Rhodesia.

The areas of Southern Rhodesia originally under the tsetse fly lay northwards from the Limpopo and southwards from the Zambesi. Only the central highlands were not infested. In 1896, however, a rinderpest epizootic swept down Africa killing the game in great numbers. When the disease had passed, the southern part of Southern Rhodesia was free of tsetse and in the north it remained in a few scattered pockets only.

Obviously it would seem the destruction of the game had caused the disappearance of the fly. But it may possibly be that the two were merely contemporary, for there is evidence that the fly had already started to disappear.

The next stage in the history of the tsetse is the coalescence of the tsetse pockets in the north and the fly's advance southwards from the Zambesi valley. By 1932 twenty-six thousand square miles of country, that is about half the previous northern fly-belt, was again under fly. Then began the game slaughter policy which has resulted in the yearly killing of some thirty thousand animals. This number of course excludes animals not reported and wounded animals.

Game slaughter is effected by African hunters who receive a small monthly wage and are provided with food, rifle and ammunition. Every round of ammunition must be accounted for. The hunter disposes as he will of the animals he kills. Control is by European rangers, each of whom should be able to visit his hunters once monthly. The rangers are not particularly well paid but receive a £10 bonus for every elephant they shoot. This method of game destruction has the advantage of being cheap; its disadvantages include the obvious temptation to the hunter, to hunt beyond his allotted area, if game is scarce, and to hunt especially the more profitable game.

At first game destruction was largely carried out between parallel fences ten miles apart, working from tsetse free areas northwards towards the Zambesi valley. When one strip was clear another fence could be made to the northward, thus pushing back the game and with it the tsetse. Obviously fences made for a high degree of efficiency, but they were abandoned on grounds of economy and natural lines such as a river bed, or even an imaginary line between two features used instead.

As may be imagined, this ruthless policy has not escaped criticism, especially as motives of economy seem to have overridden considerations of humanity and wild life conservation. By it the Southern Rhodesia Government has earned world-wide opprobrium, not always founded on sufficient knowledge, but based on the reasonable plea that other methods should be properly tried and more notice taken of work done elsewhere in Africa against the tsetse. But in 1940, the Government yielded to public pressure, to the extent of ordering no extension of the area of slaughter beyond the line which had already been reached. Slaughter up to that line continued.

The most spectacular success ever achieved against tsetse by methods other than game destruction has been in Zululand where *Glossina pallidipes* has been eradicated by air spraying of its breeding haunts with insecticide. In 1953 and 1954 an experiment in this method was made in Southern Rhodesia. Its lack of success so far may be attributed partly to the

difference between the climates and vegetation of the two countries, which not only make the tsetse breeding grounds in Southern Rhodesia far harder to distinguish from the air, but also reduce the amount of effective flying time in that country. Moreover *Glossina morsitans*, the most troublesome tsetse in Southern Rhodesia, does not appear to be locally restricted during its breeding season as *G. pallidipes* is. A danger inherent in this method has been pointed out by Dr. Du Toit, who had advised on the experiments. It had been found in Zululand that the principal parasite of the fly was more susceptible to spraying than the fly itself. If all the parasites were eliminated, but not all the tsetse, the final result might be an increase in tsetse numbers.

Other methods have been suggested and some tried for destroying tsetse. Donkeys and cattle dipped or sprayed with insecticides should be driven through the bush; even zebra and eland should be tamed and similarly dealt with. Chlorine gas should be employed. The flies should be trapped. Various biological methods of control should be used. Some of these have proved successful elsewhere but always where the tsetse was in a restricted area. In Southern Rhodesia the north fly front is six hundred miles in length.

Game destruction and the other methods so far considered attack the tsetse either directly or through its food. There remains the attack through its demand for shade, the attack through its habitat.

If a belt two miles wide or more is cleared of forest and bush, the tsetse will not cross it. Such a clearing has been made in the Chipinga district in the S.E. corner of Southern Rhodesia where there is a very serious fly threat from Portuguese East Africa. This "barrier clearing" method is destructive of forest and expensive to maintain—the 40-mile long Chipinga barrier costs £7,000 per annum. But there is an alternative form of clearing. It has been shown in East Africa, though the reason is not yet quite understood, that if the kind of vegetation upon which tsetse particularly depend is removed, the fly will disappear. Between 3 per cent and 10 per cent of the tsetse-infested area must be cleared in this manner, in a strip at least ten miles wide. Discriminative clearing, as this is called, is comparatively cheap; it is economical of woodland; its results are long lived. On the other hand, it can only be applied after entomological and biological surveys have been made and by trained staff.

In 1953 the Federation of Rhodesia and Nyasaland was formed and assumed responsibility for tsetse and trypanoso-

miasis. In Southern Rhodesia it was faced with the following position: in the north, along the Zambesi, an area heavily infested with tsetse: to the south of the infested areas, an area kept clear by game slaughter: in the north-east and south-east corners of the country, new tsetse threats from Portuguese East Africa. The rest of Southern Rhodesia was clear but there was the remembrance that before the rinderpest outbreak of 1896, the greater part of the country belonged to the tsetse fly. The principal known methods of fighting tsetse were game slaughter, to which opposition was steadily growing, air spraying and discriminative clearing. In these circumstances the Governor-General appointed a Commission consisting of Sir Eric Thomas, Professor T. H. Davey and Mr. W. H. Potts, to enquire into trypanosomiasis in Southern Rhodesia and to make recommendations. This body has now published its findings (*Report on the Commission of Enquiry on human and animal trypanosomiasis in Southern Rhodesia*, Government Printer, Salisbury). After considering the background of tsetse fly and game, this report goes on to consider future policy. In the old days if an area became unusable because of tsetse, the native or European rancher moved to another part of the country. Now there is no unallotted land which he can occupy. And more than that, it may soon be necessary to win more land from the fly, a position which might lead to an extension of game destruction beyond the limit laid down in 1940. The Commission urges that before any such extension is made, the land already free from fly should be fully utilized, the existing native reserves should be fully settled and known methods of improving carrying capacity of land carefully studied. Great stress is laid on the consolidation of land won from the tsetse.

In other countries, when tsetse have to be driven from an area, their place has been taken by close settlement and this has of itself prevented their return. Much of the tsetse area in Southern Rhodesia is too unfertile for the agriculture which close settlement entails; besides it is difficult to wean the Matabele from a cattle economy and cattle cannot be maintained in areas recently won from the fly, which, in Southern Rhodesia, would not be isolated but adjacent to fly belts. To solve Southern Rhodesia's special difficulties the Commission recommends study of the application to Southern Rhodesia of the knowledge of tsetse control gained elsewhere. All the necessary fundamental research is already being carried out in East and West Africa.

On the vexed question of game destruction, the Commission comes to the conclusion that game destruction is holding the fly

in check and that if it were stopped the fly would again advance. They therefore regretfully recommend that game destruction shall continue for a few years, at least, until alternative methods, particularly discriminative clearing, and perhaps air spraying in some places, can replace it. At the same time, the Commission urges strongly "that no effort should be spared and no time lost in investigating and preparing for use the alternative methods recommended, or any others which may be discovered in the near future".

Very considerable modifications are recommended in implementing the game destruction policy. Proper control of the hunters must be rigidly enforced. A return must be made to the practice of working between fences, which makes control possible and also has the effect of driving the game back as well as slaughtering it. The hunters' wages and conditions of service should be improved; they should be men carefully selected and trained in the use of firearms. The system under which the hunters may themselves dispose of their kill should be abolished. At the same time the status, living conditions and salaries of the rangers should be improved. The bonus of £10 paid to them for each elephant should cease. Though they would remain in charge of game control, the rangers' main work should be to report on everything to do with the fly itself. Stress is laid on the importance of fly-boys who can become highly skilled workers, capable of reading a map, using survey instruments and knowing the significance of any tsetse they pick up. The Commission considers that shooting by sportsmen has no place in tsetse control and recommends that no such shooting should be allowed within twenty miles of game control operations. The sportsman looks for trophies or for particular species for biltong, and in his hunting scatters the animals in all directions.

The Commission has much to say about the preservation of wild life. Where possible, the animals should be given sanctuaries into which they may retreat. No shooting shall be allowed in these reserves, but zones ten miles wide might be established around each in which shooting is allowed. These would act as buffers to prevent damage to agriculture or spread of disease by the wild animals. As game destruction is seldom complete and apparently need not be so to remove the fly, it is possible that some of the game might be allowed to recover behind the fly front, when that front had moved sufficiently far forward. Similarly, game is already protected on some farms outside tsetse areas.

Mr. A. D. Fraser, the Game Officer, said in evidence that a

distinction should be drawn between different kinds of "game". On a cattle farm kudu would not be a pest because they browse—not graze—and jump fences.

The Chairman of the Natural Resources Board, Mr. P. Gordon Deeds, said that ultimately the position would be the same in Southern Rhodesia as it already was in the Union of South Africa, where game survived only in the national parks and he recommended that there should be no delay in providing absolute game reserves. The Commission accepted this forecast of the future and said in their Report that it was imperative that all interested in the preservation of game should insist that adequate reserves should be set aside before it was too late. This advice will no doubt be taken. Those to whom it is addressed may be tempted to ask why little notice of their pleas for wild life preservation has been taken in the past and why the reforms on which the Commission insist could not long ago have been instituted.

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#### THE FIELD'S VIEW

The Editorial of the *Field* for 12th April, 1956, was as follows:—

#### *Slaughter*

From Southern Rhodesia it is reported that in that territory alone "a record total" of 36,910 animals were destroyed in the last year by operations against tsetse fly. In the same period two international conferences were held in the cause of wild-life preservation, and throughout British Africa much lip service, and some hard cash, was paid to the cause of perpetuating that to which we often refer as "this heritage".

It is a strange world.

To reveal its strangeness more exactly we quote some detailed figures. The year's kill was made up of 3,219 baboons, 61 wild dogs, 35 hyenas, 19 leopards, 4 lions, 55 elephant, 8 rhinos, 313 zebra, 950 bushpigs, 4,503 warthogs, 377 buffalo, 50 hartebeest, 80 tsessebe, 301 waterbuck, 777 reedbuck, 1,351 sable, 306 roan, 291 eland, 4,937 kudu, 5 nyala, 1,788 bushbuck, 2,259 impala, 12,566 duiker, 1,037 klipspringer, 134 oribi, 1,206 Sharpe's grysbok and 278 steenbok. The director of tsetse fly operations is able to report that these casualties were inflicted at the rate of 2.6 rounds of ammunition per animal.

A Southern Rhodesian newspaper points out, with ingenuous

clarity, that in no other year has the total number of animals destroyed reached 30,000 ; that the previous record, in 1951, was 28,482 ; and that since 1932 the " grand total " is 550,597. The verbiage is indicative. If it carries no overt endorsement, it implies absence of regret at these enormities.

In face of such figures, a foreigner might suspect us of hypocrisy when we speak of our determination to protect the Empire's big game. What do the British think of it ? Public opinion here, too long denied the facts, has been given the impression by such foreigners as the sanctimonious M. Armand Denis that the diminution of African game is due to what he is pleased to call, when broadcasting to the nation whose guest he sometimes is, " gun-toting sportsmen." The public should learn the truth. They should know that all the safaris in the whole of Africa in the time could not together have caused a tenth of this shocking toll.

The public, here and in Africa, should ponder one thing more about this strange world. The game has gone from large areas of Southern Rhodesia ; small wonder, at this rate of slaughter. The tsetse fly, however, is still there.

With permission of the *Field*, the above extract was sent to each of the 30 members of the Southern Rhodesia Parliament, accompanied by the following letter :—

27th April, 1956.

Dear Sir,

I am instructed to send you the enclosed cutting from the Editorial of the *Field* for the 12th April, 1956.

Our Society thinks that this editorial reflects clearly the ever-increasing anxiety with which people in the old country regard the terrible slaughter of game in Southern Rhodesia.

Our Society does truly appreciate the difficulties resulting from the presence of tsetse flies, and has studied very carefully the recent report of the independent commission of inquiry on trypanosomiasis. May we invite your special consideration to the commission's suggestion that, before it is too late, adequate reserves should be set aside for the preservation of the wild life of Southern Rhodesia ?

Yours faithfully,

C. L. BOYLE,  
*Secretary, F.P.S.*

To this letter eight members of the Southern Rhodesia Parliament including the Prime Minister, have replied, all in terms sympathetic to wild life preservation.