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# **Tsetse Fly in Southern Rhodesia**

## **1950-51**

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By J. A. WHELLAN, B.Sc., F.R.E.S.,  
Entomologist, Division of Agriculture and Lands

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# Tsetse Fly in Southern Rhodesia 1950 - 51

By J. A. WHELLAN, B.Sc., F.R.E.S.,  
Entomologist, Division of Agriculture and Lands.

This account covers the year 1st October, 1950, to 30th September, 1951.

In the Urungwe district the incidence of Animal Trypanosomiasis increased. No general advance of tsetse, *G. morsitans*, was detected, but occasional tsetse were reported from time to time as having been detected in various parts of the Urungwe Native Reserve. An increase in the density of tsetse was, however, confirmed at localities to the west of this Reserve.

In the Mtoko district the incidence of Animal Trypanosomiasis remained high in the east of the district, and a slight advance of *G. morsitans* into the south-eastern corner of the Mkota Native Reserve was detected.

In the Sabi Valley occasional tsetse, *G. morsitans*, were found on the Sabi River above the Sabi-Lundi junction and outbreaks of Animal Trypanosomiasis on a limited scale occurred in this area.

In all other areas the position has remained static during the year.

Cases of Human Trypanosomiasis numbered nine, one of which was fatal. All these cases involved Natives living in or travelling through or from the Zambesi Valley, which thus remains the only known area of infection.

More Tsetse Fly Rangers were supplied with motor transport, and new roads to facilitate inspection of the areas were cut in the Sebungwe, Urungwe and Darwin Districts, the total mileage maintained by Tsetse Fly Operations being approximately 600 miles.

On completion of his training in East Africa, Mr. D. F. Lovemore, the Beit Research Scholar, commenced work in Southern Rhodesia in March. He carried out short investigations in the Mtoko and Urungwe Districts first and then proceeded to Kariangwe in the Sebungwe District, where he is to carry out detailed observations over a complete year with a view to assessing the possibilities of a variety of methods of control.

## Conferences, Committees and Visits.

The third meeting of the International Scientific Committee for Tsetse and Trypanosomiasis Research was held at Bobo-Dioulasso, in French Equatorial Africa, in June. Dr. G. R. Ross, Director of Curative Services, Department of Health, represented Southern Rhodesia.

The writer visited Uganda in February to advise on the consolidation measures being taken to prevent country reclaimed from *G. morsitans* from becoming reinfested.

Two meetings of the Southern Rhodesia Trypanosomiasis Committee were attended.

### Destruction of the Animal Hosts of Tsetse Flies.

Due to stocks of Martini-Henry ammunition becoming low and a number of the rifles wearing out, it was decided to change over to the use of .303 rifles and ammunition, since this was readily available while Martini-Henry would have to have been specially manufactured at much greater expense. The change-over has so far affected only one area, but it is expected that it will be completed in the ensuing year. Contrary to expectations this change-over has not, so far, resulted in any appreciable increase in ammunition used per animal killed, at least as far as can be deduced from records. It is, however, possible that Native hunters keep what may be termed a "tail bank," into which they deposit spare tails when they have a particularly successful month, withdrawing them when not so successful. The reserves would not yet have been exhausted but should be in subsequent years.

During the year a total of 28,489 animals were destroyed. This total was distributed among the species according to the following table:

Elephant	.....	16	Reedbuck	.....	788
Rhinoceros	....	6	Bushbuck	.....	2,039
Buffalo	.....	491	Duiker	.....	8,413
Zebra	.....	261	Warthog	.....	4,022
Wland	.....	339	Wild Pig	.....	820
Kudu	.....	4,664	Baboon	.....	1,920
Roan	.....	218	Lion	.....	7
Sable	.....	1,120	Leopard	.....	23
Waterbuck	.....	447	Cheetah	....	1
Hartebeeste	.....	133	Hyaena	.....	15
Tsessebe	.....	91	Wild Dog	....	48
Impala	.....	2,607			
			Total	.....	28,489

### Traffic Control.

In the Mtoko District two traffic control points have been in operation throughout the year. The third, on a footpath crossing the international boundary, was discontinued as it was found to be only one of many such paths, to control all of which would have been impracticable.

Traffic was examined travelling in both directions at all control points.

#### (a) Mtoko District.

##### (i) Oasis Gate.

##### Eastbound Traffic.

2,213 cars bringing	.....	1 fly (female)
24 cyclists bringing	.....	no fly
95 pedestrians bringing	.....	no fly
Total	.....	1 fly (female)

**Westbound Traffic.**

2,043 cars bringing	.....	23 fly (14 male, 9 female)
60 cyclists bringing	.....	3 fly (2 male, 1 female)
688 pedestrians bringing	.....	19 fly (13 male, 6 female)
Total	.....	45 fly (29 male, 16 female)

**(ii) Border Gate.****Eastbound Traffic.**

2,396 cars bringing	.....	64 fly (36 male, 28 female)
60 cyclists bringing	.....	14 fly (9 male, 5 female)
280 pedestrians bringing	.....	19 fly (11 male, 8 female)
Total	.....	97 fly (56 male, 41 female)

**Westbound Traffic.**

1,856 cars bringing	.....	91 fly (53 male, 38 female)
30 cyclists bringing	.....	2 fly (2 male, 0 female)
703 pedestrians bringing	.....	19 fly (13 male, 6 female)
Total	.....	112 fly (68 male, 44 female)
Total flies caught: 255 (153 male, 102 female)		

**(b) Urungwe District.****(i) Chirundu Gate.****Northbound Traffic.**

3,617 cars bringing	.....	368 fly (232 male, 136 female)
371 cyclists bringing	.....	183 fly (116 male, 67 female)
1,393 pedestrians bringing	.....	142 fly (92 male, 50 female)
Total	.....	693 fly (440 male, 253 female)

Compared with 1942 (276); 1943 (746); 1944 (437); 1945 (485); 1946 (incomplete, 319); 1947 (211); 1948 (214); 1949 (658); 1950 (289).

**(ii) Vuti Gate.****Southbound Traffic.**

3,571 cars bringing	.....	13 fly (7 male, 6 female)
248 cyclists bringing	.....	2 fly (1 male, 1 female)
1,539 pedestrians bringing	.....	2 fly (1 male, 1 female)
Total	.....	17 fly (9 male, 8 female)

Compared with 1942 (49); 1943 (56); 1944 (27); 1945 (29); 1946 (23); 1947 (20); 1948 (11); 1949 (17); 1950 (19).

**(iii) Catkin Chamber.****Eastbound Traffic.**

241 cars bringing	.....	4 fly (4 male, 0 female)
929 cyclists bringing	.....	23 fly (14 male, 9 female)
2,794 pedestrians bringing	.....	20 fly (16 male, 4 female)
Total	.....	47 fly (34 male, 13 female)

Compared with 1944 (5 months only, 15); 1945 (61); 1946 (37); 1947 (28); 1948 (34); 1949 (91); 1950 (85).

(iv) **Makute Gate.****Southbound Traffic.**

3,946 cars bringing	.....	582 fly (410 male, 172 female)
1,340 pedestrians,		
757 cyclists bringing	.....	809 fly (566 male, 243 female)
Total	.....	1,391 fly (976 male, 415 female)

Compared with 1944 (4 months only, 100); 1945 (562); 1946 (703); 1947 (764); 1948 (504); 1949 (1,718); 1950 (1,097).

(v) **Nzoe Gate.****Southbound Traffic.**

59 cars bringing	.....	94 fly (72 male, 22 female)
3,444 pedestrians,		
334 cyclists bringing	.....	357 fly (251 male, 106 female)
Total	.....	451 fly (323 male, 128 female)

Compared with 1949 (6 months only, 170); 1950 (153).

Traffic travelling in the reverse directions at these points was not found to carry any tsetse.

### **SHORT ACCOUNT OF THE TSETSE FLY SITUATION IN EACH DISTRICT IN SOUTHERN RHODESIA**

1. **Mtoko.**

The position in the Mtoko District appears now to have become more or less stationary. From 1947 to 1950 tsetse advanced north-westwards across Portuguese East Africa from the Ruenya River near Changara, across the Southern Rhodesian border near the main Mtoko-Changara road. During this period increasingly heavy cattle losses were sustained in the Mkota and Chikwizo Special Native Areas. A peak was reached in December, 1950, but this was not so high as that of April, 1950. The cattle were treated with Dimidium Bromide under the direction of the Director of Veterinary Services and losses in 1951 have not been so great. Nevertheless, the incidence of trypanosomiasis has not lessened and the threat to these cattle remains serious. The danger of carriage of tsetse by traffic along the main Changara-Mtoko road was countered by the establishment of two traffic cleansing posts on this road. At first they were gates, but one of these was replaced by a chamber in September, 1951. Arrangements are now being made to erect a game fence along the international border from the Mazoe to Ruenya Rivers, to shoot game on the Southern Rhodesian side of this fence, and to subject animals in the Mkota Special Native Area to spraying or dipping so that they carry sufficient benzene hexachloride to render them toxic to tsetse. Across the border the Portuguese have erected a cleansing chamber and employ a few Native hunters, but the country is largely uninhabited and therefore difficult to investigate. It thus appears that to keep tsetse within its present limits a campaign of indefinite duration will be required. The threat of a further advance of tsetse will always be present while tsetse remains in adjacent Portuguese territory.

A survey of the Mkota Reserve was made by Mr. H. E. Hornby together with the Chief Pasture Research Officer and the writer, in September, to investigate the possibility of using closer and more organised settlement in the Mkota Reserve to prevent the

further encroachment of tsetse. The conclusions of this survey were that this Reserve did not lend itself to such development because of the rough nature and low fertility of much of the country.

## 2. Darwin.

Tsetse are now very scarce in this area. They are still to be found in small numbers below the escarpment between the Utete and Umsengedzi Rivers, but are not found elsewhere in the district except occasionally close to the border of Portuguese East Africa on or near the Umkumvura and Umsengedzi Rivers.

## 3. North Lomagundi.

Tsetse occur in this area below the escarpment in the Zambezi Valley. They are not very numerous over most of the area, but are dense on the lower Angwa River and some of its tributaries. The main object of tsetse fly operations in this area is to keep game at the foot of the escarpment in very low density, so that tsetse has no chance to re-establish itself here and move southwards beyond the escarpment.

## 4. Urungwe.\*

In the Urungwe District tsetse is plentiful in the Zambezi Valley, but as there is no immediate prospect of utilising this land no attempt is being made to reduce its numbers there. Where the main Salisbury-Lusaka road traverses the tsetse belt, shooting has been carried out in a strip of country five miles wide on each side of the road in an effort to reduce the number of game and hence the number of tsetse close to the road. Judging by the numbers of tsetse caught at the traffic control points on this road over the past few years it is very doubtful whether such a reduction is being effected. Three traffic control points are maintained on this road, at Chirundu, Makute and Vuti. All are at present gates but a chamber is to be erected at Makute next year. There is also a cleansing chamber on the branch road to the Catkin Mine.

Game destruction operations are carried out in a belt along the top of the escarpment and along the western side of the Urungwe Native Reserve, with a view to preventing the return of tsetse to the occupied part of the Urungwe Native Reserve and to the Karoi and Miami farms. Tsetse remains established to the north of the Mkwichi and Katsiga Rivers and west of the Urungwe Native Reserve, extending for a short distance into this Reserve on the Nyadara, Kanyati, Msukwi and Badzi Rivers. In the past two years numerous cases of animal trypanosomiasis have occurred in the Urungwe Native Reserve after several years freedom from the disease. Local opinion is that tsetse has spread widely into the Reserve, but no conclusive evidence of any such spread has been adduced nor, despite repeated search, have any tsetse been caught east of their previously known haunts by Rangers or Entomologists. All such reputed captures, when investigated, have been proved to be based on Native evidence which cannot be regarded as conclusive. It would seem that the main, if not the only, cause of the outbreak has been the quite inadequate supervision by the owners of their cattle, permitting them to graze far west of their safe pastures. This could lead to the carriage

of tsetse to the eastern part of the Reserve. At present three fences are being erected, one on each of the western and eastern boundaries and one from north to south down the middle of the Reserve. It is expected that when these fences are completed cattle straying will virtually cease and at the same time destruction of game in the west of the Reserve will be greatly facilitated. In an effort to eradicate any tsetse which may reach the occupied part of the Reserve and to kill other blood-sucking flies which may effect mechanical transmission of trypanosomiasis, benzene hexachloride is being added to the cattle dips in the Reserve.

#### 5. South West Lomagundi and Hartley Districts.

In these districts tsetse does not now occur. It is found in the Sebungwe District well to the west of the settled areas of the Hartley District, its eastern boundary of distribution being a line running 10 miles west of the Umniati and Sanyati Rivers and approaching the Sanyati in its northern part to cross this river at the Tengwe River in the Urungwe District. One tsetse was caught in January, 1951, in the Lomagundi District, close to Hova's where there are cattle. The occurrence was thoroughly investigated but no more tsetse were found nor did any cases of trypanosomiasis occur, so that it can safely be assumed that this was a carried tsetse, far to the east of its present normal haunts. The Sanyati Native Reserve now carries a considerable cattle population. Unfortunately a number of cattle have been moved west of the Umniati River into the Sebungwe District, without authority. Though as yet this has had no repercussions, it may be expected to if not checked, as these cattle could form a bridge for tsetse to re-enter the Sanyati Reserve.

#### 6. South Central Sebungwe.

This area has been separated from the West Sebungwe area under a separate ranger only since 1949, and only since then have properly conducted operations been carried out. Due to staff shortages they have not been continuous even during this period. At first tsetse were thought to occur only on and to the north of the Malundu River. With the closer exploration of the area they have been found considerably further to the south, certainly as far as the Mapumbu River, and there are unconfirmed reports of them on the Lutopsana River. In these southerly localities they are always in very small numbers. These recent discoveries, and they are regarded as such rather than as indications of any southerly spread of tsetse, have led to the southward movement of the shooting belt, and to the revised information given to the Native Department that it would be unwise, at present, to settle the Karna Special Native Area within three miles of the Lutopsana River.

#### 7. West Sebungwe.

In this area, more than in any other, occurrences of tsetse at considerable distances outside (i.e., south of) their normal haunts have been reported and, moreover, in many cases confirmed. There also seems to have been a real southward encroachment of tsetse in the last year or two though such encroachment nowhere exceeds a few miles. The present position is such that tsetse are established as far south as a line running ten miles north of the

Mzola River and parallel to it, and that incursions almost as far south as the Mzola River on the part of small numbers of tsetse occasionally occur. These occasional tsetse give rise to a good deal of alarm among the local European population. That these incursions are rare and ephemeral is shown by the extreme rarity of trypanosomiasis in cattle on the Karna Block and Gwaai Ranch. (Compare Mtoko District.) The few cases of trypanosomiasis which have occurred have been readily traceable to straying of these cattle which have recently been seen in considerable numbers as much as 10 miles to the north of the Karna Block and 30 miles to the west of it on the Lutopsana River in the Karna Special Native Area, by officers of both the Entomological Branch and the Native Department. While straying on such an extensive scale continues, occasional cases of animal trypanosomiasis are to be expected.

The slight southward movement of tsetse which has occurred in the area is probably due to a combination of causes as follows:

- (i) Considerable movement of traffic on the Gwaai Bridge-Lusulu-Sitonga Road in 1950.
- (ii) Drying up in 1950 of water supplies previously thought permanent, causing the closing down of some hunters' camps.
- (iii) Lack of transport for the Tsetse Fly Ranger, making it easy for Native hunters to poach to the north where game was more plentiful and neglect the areas allotted to them.
- (iv) Possible over-confidence in moving hunters to the forward part of the area with a consequent too early withdrawal from the south of the area.

To counteract these causes the following steps have been taken or are planned:

- (i) The 1950 traffic was due mainly to European hunters; no permits were issued in 1951. But in late 1951 coal working at Sitongas was resumed, resulting in a new increase in traffic. As this is likely to increase, the erection of a cleansing station on the Gwaai Bridge-Lusulu Road in 1952 has been recommended.
- (ii) Water has been delivered by lorry in 1951, enabling almost all hunting camps to remain open.
- (iii) Transport became available too late in 1950 for it to proceed to the area because of weather conditions. It was taken there early in 1951.
- (iv) Absences of hunters from their posts are now more easily detected because of the availability of transport, and disciplinary action can be taken.
- (v) The advanced hunters have been removed and some southern camps re-established.

#### 8. Eastern Border (Chipinga).

The border clearing, approximately 40 miles long and averaging 1 mile wide, appears to fulfil its purpose, against the three species of tsetse, *G. morsitans*, *G. palpalis* and *G. brevipalpis*, which are established in Portuguese East Africa. Very few flies



of any species are caught in Southern Rhodesia (1948, 7; 1949, 4; 1950, 3). The incidence of animal trypanosomiasis varies a little from year to year, between 35 and 132 in the period 1944-51 (47 in 1951). These figures are sufficiently nearly constant to encourage the belief that a stable situation has been set up, which is all that can be expected without an extensive campaign in adjacent Portuguese East Africa. Shooting as a means of control is not carried out in this area.

#### 9. Sabi Valley.

In this area essentially the same situation occurs as in the Mtoko District except that here there are no cattle close to the infested part of Portuguese East Africa so that trypanosomiasis cases are rare. *G. morsitans* occurs in Portuguese East Africa fairly close to the border all the way from the Umseleswe River to the Sabi-Lundi junction. It crosses the border only in one place, on the Honde River, where it extends for a mile or two into Southern Rhodesia. The reduction of game and the exclusion of cattle are inimical to its establishment elsewhere. South of the Sabi River tsetse does not approach the border so closely. As with the Chipinga area our aim here can only be to preserve the *status quo* and prevent an extension of range of *G. morsitans* into Southern Rhodesia. Our detailed knowledge of this area has suffered because of staff changes and shortages. Since the death in 1949 of the resident ranger there have been five rangers, four of whom have resigned or been dismissed and none has remained in the area more than three months with consequent intervening periods when no ranger was resident and supervision nil.

#### Future Plans.

There is no general plan for driving all species of tsetse out of the country completely. Any such plan would be dependent for its continued success on full co-operation with Northern Rhodesia, Portuguese East Africa and possibly the Bechuanaland Protectorate, as otherwise re-infestation from these territories would occur. The present plans are to hold tsetse in its present position and to drive it back as and when the demand for land arises. This is being done either by localised game destruction or, in the Chipinga District, by maintaining the barrier clearing. This is partly because of a promise made by the then Minister of Agriculture in Parliament on 11th August, 1942, not to extend game destruction operations, and partly because of the great difficulty of holding land freed from tsetse against re-infestation unless it is occupied and developed. At present research is being carried out in the Sebungwe District with a view to discovering whether methods of tsetse control other than game destruction are feasible in this country. This research is based on the most recent investigations made in East Africa. When any future advance against tsetse is required, this should be preceded by a better survey than has hitherto been possible using the most modern survey methods. The establishment of a survey team for this purpose is desirable.