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Tsetse Fly Operations

SHORT SURVEY OF THE OPERATIONS BY
DISTRICTS.

For the year 1940

By J. K. CHORLEY, Entomologist
Extracted from the Annual Report of the Chief Entomologist.

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The continued retreat of the tsetse, *G. morsitans*, in the northern areas has considerably lengthened the lines of communication with our base camps, three of which have had to be moved forward during the year in order to ensure effective control of the operations. In the Wankie area the base camp has been transferred 60 miles north to Sibilo Vlei in the Sebungwe district, the main camp in the Doma area has been moved 40 miles north to Tondongwe on the escarpment, while in the Darwin area a new main camp has been established 60 miles north near Bandilombidzi, also on the escarpment. The cost of transporting supplies has increased considerably in all areas, while the cost of meal has also increased owing to the Maize Control Act. Supplies for Muzaza camp in the Sebungwe are obtained from Bulawayo and have to be transported 161 miles by rail and 90 miles by motor lorry. Tondongwe camp is now 92 miles from the railway at Sinoia, and Bandilombidzi 100 miles from Bindura. Over 150 miles of road were cut to open up these advanced camps. Communication with these base camps by heavy motor lorries is impossible during the rains and all supplies for the wet season have to be purchased and transported before the rains commence.

In conformity with the general plan of campaign as laid down, the operations have been pushed forward on four fronts, mainly in the Sebungwe, Urungwe, Lomagundi (Doma) and Darwin areas, and minor adjustments in the line have been made in Lomagundi, S.W. The operations in the Darwin and Doma areas are now entirely confined to the Zambesi Valley, the fly having been pushed north of the escarpment on a front of over 100 miles, extending from Darwin to west of the Angwa River. The general policy pursued is the maintenance of the whole of the country south of the escarpment

free from tsetse and available for either European or native settlement.

The area actually cleared of tsetse remains approximately at the figure given last year, namely, 6,100 sq. miles. It is, in fact, too early to expect results from the new areas included in the operations during the last two years. An appreciable improvement has occurred in the older areas, particularly in the Urungwe, Darwin and Sebungwe districts, where the density of fly has been reduced to vanishing point over fairly extensive areas.

There has been an increase in the number of native cattle running in the previously infested Doma area, where there are now over 2,090 head, while a few head have been established at a kraal close to the escarpment. In other areas native cattle are being taken into country recently cleared of tsetse, a notable instance being the introduction of stock to the junction of the Kana and Shangani Rivers in the Bubi district, where there have been no cattle since about 1912. The improvement in the Urungwe district has made available for European settlement a very large area suitable for tobacco and a considerable number of farms have been surveyed. One large block of land has been taken up, the northern position of which actually lies within the danger zone north of the cleansing chamber at Vuti.

The position on the Eastern Border east of Chipinga has greatly improved, only 132 cases of animal trypanosomiasis having occurred compared with over 1,000 last year, and fewer farms were involved. Very extensive felling operations were completed along the most vulnerable stretch and maintenance work carried out over the rest of the clearing.

The continued advance of *G. morsitans* towards our border in the lower Sabi Valley necessitated the inception of controlled game elimination operations as a defensive measure.

A total of 15,509 head of game were destroyed for an expenditure of 34,447 rounds of ammunition or 2.2 rounds per head.

A sporadic outbreak of animal trypanosomiasis occurred on the Umtali commonage during July, involving about ten head. Later, during October and November, fourteen cases

were diagnosed on "Valhalla," a border farm, east of the Vumba Mountains. On this farm 26 cases occurred, with twelve deaths. It is presumed that there is a very light infestation of tsetse in Portuguese East Africa, but as there is a considerable population of both European and native owned cattle in the immediate vicinity of the border, stated to be free from trypanosomiasis, the source of the trouble is rather a mystery. It is possible that further outbreaks may not occur, at least for some little time. The species of tsetse involved in these outbreaks is not known.

Darwin.—The distribution of fly has remained unchanged during the year. The area covered by the operations was extended west to the Kadzi River in the Sipolilo district, where they join up with the native hunters controlled from Doma, at the end of the rains. Fly densities are extremely heavy close to the Msengedzi River, game is abundant and the effect of the operations in this new area will not become apparent for some years.

South of the escarpment cattle have now been established at Cheweshe's kraal on the extreme north-west corner of the Kandeya Native Reserve, while a few head have been introduced to the Mavuradona Mission Station below the escarpment, close to the eastern boundary of the Chiswiti Native Reserve. No cases of animal trypanosomiasis have been reported. A new main camp was established on the escarpment sixty miles north of Darwin and several miles of new roads cut to improve communications.

Doma Area.—This area up to the escarpment was cleared of tsetse by 1937, and has remained clear since that year. An extension of the operations north of the escarpment was considered unnecessary and inadvisable until the eastern extension of the Zambesi Valley fly belt in the Darwin district began to recede before the pressure of our operations. By the end of last year the Chiswiti Native Reserve in the Darwin district had been cleared of tsetse and the operations extended to the Utete River. At the end of the rains the main camp was moved from Doma to Tondongwe on the escarpment and the operations pushed north on a broad front below the escarpment from the Angwa River on the west, linking up with the operations in the Darwin district on the east. A

temporary dry season camp was established on the Hunya River below the escarpment. The operations previously carried out by the Native Department in the Sipolilo area were also pushed forward and taken over by this office.

Density counts have been taken over the whole area, which is heavily stocked with game and in most parts densely infested with fly. The operations cover an area some 15 to 20 miles north of the escarpment, but do not extend as far north as the Portuguese border.

Urungwe.—The great improvement in this area mentioned in last year's report has been reflected in the greatly decreased number of tsetse caught off traffic at Vuti cleansing chamber. In fact, no flies were caught during the second half of the year. The main road to Chirundu is practically clear of fly to the escarpment, though fly persists in some numbers a few miles from the road on the Rekometje River and elsewhere, and is particularly dense near Chipatani. Much of the land cleared of fly, or which in the past was in the danger zone, is very suitable for tobacco, and a number of new farms have already been taken up and many more surveyed. Vuti chamber is actually south of one of the areas taken up, which is temporarily unsafe for cattle, necessitating an extension northward of the area covered by the present operations.

A few cases (7) of trypanosomiasis occurred early in the year on "Coldomo Farm," and among native stock on the Nyaodza River and Chikangwe River, a small stream near the headquarters of the Mleleche River, in all about twenty cases. These outbreaks are sporadic and in no way indicate a deterioration in the position, which in general has improved. A few head of cattle have been established near the middle of the Urungwe Native Reserve, where there have been no cattle since 1931. The area covered by the operations was extended to the Sanyati River in order to accelerate the eradication of fly from the Urungwe Native Reserve, which, in the near future, may be required to accommodate cattle moved from the ground now taken up by European farmers.

The main road below the escarpment to Chirundu is lightly infested with fly, which may increase in density as game returns to the vicinity of the road. Around Chirundu both game and fly appear to be on the increase now that construction work on the road and bridge has ceased.

Lomagundi, S.W.—The distribution of fly in this area has remained unchanged, no tsetse having been seen in the previously cleared areas north of the Umfuli River and east of the Sanyati River. West of the Sanyati River an apparent increase in density was noticed at some pans much favoured by game. These pans remained full of water after the heavy rains of 1938/39 and 1939/40.

During May a sporadic outbreak of trypanosomiasis occurred on Msango Farm, about eleven head contracting the disease. It was assumed that fly had been carried to the farm, either by motor cars coming from the Sanyati River or on elephant, which crossed the Umfuli on several occasions from the fly infested Nyhondi area south of the Umfuli River. As a precautionary measure two guards were posted at the old Zumba Fly Station and all traffic examined for the presence of tsetse. These guards were withdrawn in November, no tsetse having been seen. Two elephant bulls were also destroyed in order to keep the herd south of the Umfuli River. No further cases of the disease have been reported since June, and it is unlikely that others will occur, though there may be relapses.

The area covered by the operations was extended to the Umvumvudzi River at the end of the rains.

Gatooma.—Tsetse still persists in very small numbers on the east bank of the Umniati River below Rob's Drift, particularly on the Nyhondi River, but is on the point of extinction. West of the river a decrease in density was noticed over the area covered by the operations, only odd flies now being seen close to the Umniati River. Some miles further west of the river heavier densities have been recorded close to the Gokwe plateau. A few milch cows have been kept at a mine close to Rob's Drift for several months and so far have not contracted trypanosomiasis, although fly is known to be present within 10 miles of the mine and can be carried to the mine on cars or cyclists. Progress has been slow during the last two years, but in general, satisfactory. A few more natives with their families have settled along the Umniati River, but until the area is completely cleared of fly it will not be possible to re-settle the Sanyati Native Reserve, as the native people desire to take their cattle with them.

Sebungwe (late Gwaai and Shangani Area).—The general distribution of tsetse in this area has remained unchanged, fly still persisting in very small numbers on the Mzola River at Cefula Pan. Two flies only were caught at Cewali Pan, and two or three more at different points north of the Mzola River, but south of the M'kulugusi Forest. With the exception of the Cefula Pan area tsetse has now been eradicated from the whole of the country south of the Mzola River. The M'kulugusi does not carry any permanent fly. One fly was caught at Selebani Camp, south of the Shangani River, in an area where no tsetse have been seen for over four years. It was most probably carried on a train of donkey pack animals coming from the Mzola River.

* A new main camp was established at Muzaza Hill, sixty miles north-east of Gwaai Bridge, on the main road to the Victoria Falls. Communication with this camp during the rains is very difficult and the camp has been temporarily closed down, together with most of the advanced shooting posts, for the wet season.

No cases of trypanosomiasis have been recorded from the Gwaai River and native cattle are being pushed further down the Snangani River as far west as the junction of the Shangani and Kana Rivers.

Melsetter (Eastern Border).—It is gratifying to be able to report a very considerable improvement in this area as compared with the previous year. The number of suspected cases of trypanosomiasis was 132 with 24 deaths, involving nine farms, compared with over 1,000 cases and 400 deaths during 1939 on thirty-two farms. Eighty-two cases with fifteen deaths occurred on one farm which had over 500 cases during the previous year. The number of cases actually diagnosed by blood smears was 20 compared with 311 in 1939. The extensive programme of widening the border clearing, which was commenced early in 1939, as soon as it was evident that the position was deteriorating, was continued throughout the present year, a large gang of native labourers and two European supervisors being employed. Particular attention was again given to the area lying between the Busi and Cheredza Rivers, the clearing along most of this stretch being about doubled in width on the top of the hills. Regrowth

was slashed back over most of the old clearing. Few working days were lost owing to wet weather, the winter and spring being very dry for the border. A very good burn to suppress regrowth was obtained over most of the clearing.

Two hundred and fifteen traps were erected, placed chiefly in lines running across the main valleys in the border clearing, *i.e.*, those of the Busi, Chibudzana, Inyamadzi and Cheredza Rivers. These traps caught a total of 22 tsetse (14 *G. brevipalpis*, 9 male, 5 female; 8 *G. pallidipes*, 5 male, 3 female). The total number of flies caught either in Rhodesia or close to the clearing, which in many places enters Portuguese Territory, was 306, comprised of 291 *G. brevipalpis* (281 male, 10 female) and 15 *G. pallidipes* (9 male, 6 female). The total number of flies caught inside Southern Rhodesia was 32 (20 *G. brevipalpis*, 17 male and 3 female) and 12 *G. pallidipes* (7 male, 5 female), compared with 11 (7 *G. brevipalpis* and 4 *G. pallidipes*) caught during 1939. These figures, however, are not comparable. The majority of these flies were caught in the Inyamadzi and Cheredza Valleys, particularly in the case of *G. brevipalpis*; *G. pallidipes* was found to be more widespread and has been caught near the top of a range of high hills 1,500 feet above the valley of the Inyamadzi.

Valuable assistance was given by the Portuguese authorities, who provided free labour to clear a broad fireguard along the main line of traps across the Inyamadzi Valley in Portuguese East Africa.

A short period was spent in Portuguese East Africa testing the relative attractions of various traps and screens of different colours.

Sabi Valley.—The continued encroachment of the tsetse *G. morsitans* in Portuguese East Africa towards our border was confirmed by an investigation carried out in July by permission of the Portuguese authorities. On the Honde River *morsitans* was found to be established within 10 miles of the border and all the native cattle in the area had died from trypanosomiasis. On the south bank of the Sabi River at Massengena the fly had continued to spread and cattle were infected some 10 miles south of the river. The position called for immediate defensive action, and controlled shooting

operations under the charge of a European Ranger were commenced in October. Every effort will be made to prevent the destruction of nyala, an antelope which only occurs in this locality in the Colony.

Traffic Control.—As foreshadowed in last year's report, it was found possible to close down the cleansing chamber at Nyamarapara, in the Darwin district, in March. Two stations are still being operated, namely, Vuti Chamber, sixty miles from the Zambesi River, which deals with traffic proceeding towards Sinoia, and Chirundu, where traffic proceeding north into Northern Rhodesia is examined. If the position in the Urungwe area is maintained it will be possible to close down the chamber at Vuti during the coming year and transfer this chamber to Chirundu.

The following traffic was examined:—

(a) *Vuti Chamber.*—640 motor cars bringing 14 fly (9 male, 5 female); 2,660 pedestrians and 408 cyclists (899 parties) bringing 11 fly (8 male, 3 female); total, 25 fly (17 male, 8 female).

Compared with 1932 (106); 1933 (94); 1934 (178); 1935 (454); 1936 (519); 1937 (241); 1938 (162); 1939 (62).

No flies have been caught at this chamber since July.

(b) *Chirundu.*—680 cars, bringing 74 flies; 1,202 pedestrians, 368 cyclists (722 parties), bringing 286 flies; total 360 flies (sex unknown).

Compared with 46 during four months of 1939.

(c) *Nyamarapara Path (Darwin).*—231 pedestrians, 8 cyclists (68 parties), bringing no fly.

Compared with 1932 (112); 1933 (97); 1934 (85); 1935 (161); 1936 (403); 1937 (40); 1938 (38); 1939 (14).

This station was closed in February, the last fly being caught in July, 1939.

Tsetse Fly Research.—Study has been continued of differences in the physiological condition of *G. morsitans* adults attracted to (1) man and (2) motor vehicles. In this connection large numbers of flies caught on the different attractants have been analysed for weight of fat content and of non-fatty solids at Salisbury, and the females have been dissected to ascertain their condition in respect to pregnancy. The results obtained to date from work on these lines have not been fully consistent and the matter needs further study.