Article 12

Department of Veterinary Services
Tsetse & Trypanosomiasis Control,
P. O. Box 8283,
Causeway. Salisbury.

7th September, 1962.

Assistant Director,
Veterinary Services,
Tsetse & Trypanosomiasis Control,
Box 8283,
CAUSEWAY.

TRYPANOSOME RISK - LUSULU RANCH.

INTERIM REPORT - APRIL 8th - 4th AUGUST 1962.

Dissection of samples of tsetse, caught in or near the grazing areas of the two experimental cattle herds, for the detection of trypanosome infection, has now been carried out regularly since April, 1962.

The herds are based at Lusulu and on the Busi river and samples of the tsetse populations in these two areas are obtained from two timed ox patrols RSO_2 and RSO_3, and catches on a bait ox running with each of the herds.

Trypanosome risk, which is a function of the numbers of flies attacking the cattle and the percentage of these flies carrying trypanosome infections, has been determined by various workers in different ways. In the present investigation it has been found most convenient to express the risk as the mean number of the infected flies caught on one bait ox per hour.

Sampling Method:

The method of sampling the tsetse populations was designed by R.D. Pilson with the object of obtaining as detailed information as possible. Each month one week is devoted to catching on each of the fly rounds, situated in the vicinity of the herds, and one week to catching off each of the bait oxen running with the herds.

The two fly rounds, RSO_2 and RSO_3, are each 3,000 yds long and divided into 30 sectors. Catching on these started at at 0830 hrs and continued until 1730 hrs, ten minutes being devoted to each sector. The fly rounds are in the form of a rectangle and the patrol starts on a different portion of this on each of the five days in every month during which samples are being obtained. In this way, variations in density associated with different parts of the fly round and variations in activity associated with changing temperature and humidity are, to some extent, eliminated.

The tsetse are then brought to the laboratory and divided into two batches, each of which represents one hour of catching time. In the cool weather there is an overlap of one hour in the middle of the day i.e. the afternoon patrol of the fly round commences one hour before the morning session has been completed. During the warmer weather, when duirnal tsetse activity is more prolonged, the overlap will not occur as the morning patrol will be able to start an hour earlier. As many flies as possible are then dissected from the 1st, 3rd, 5th, 6th, 8th and 10th batches. Since the density of tsetse on the fly rounds is high, it has so far been found impossible to dissect the flies in all the batches. Nevertheless the percentage infection for each month is based on samples of between 100 and 500 flies.

Catching on the bait oxen running with the herds is, of course, more or less random with regard to the area covered, but the time period over which the catches are made are identical with those on the fly rounds. The flies are divided into similar batches representing one hour time periods, only, in this case due to the lower density, the flies in all the batches have so far been dissected.

Results:

The results given below refer only to G.morsitans. Data for G.pallidipes, which is of low density, have also been collected, but time to analyse these has not yet been available.

In Table 1 are shown the mean numbers per hour of non-teneral male and female flies which attacked the bait oxen in the four sampling areas. The percentage of infected flies is based on the dissection of a varying proportion of those actually caught. From these two sets of figures are calculated the mean numbers of infected G.morsitans which attacked the oxen in one hour.

TABLE 1.

Area	week	OM/hr.	%inf.	%inf/hr.	OF/hr.	%inf.	%inf/hr.	Total inf. flies/hr.
Lusulu	37	17.0	13.9	2.4	2.6	10.0	0.3	2.7
RSO3	42	21.6	13.6	2.9	4.5	16.7	0.7	3.6
	47	23.6	11.0	2.6	7.9	14.0	1.1	3.7
	52	16.8	19.2	3.2	10.1	28.7	2.9	6.1
Lusulu	38	2.4	21.0	0.5	1.2	21.4	0.2	0.7
herd	43	7.5	9.5	0.7	2.3	16.3	0.4	1.1
	48	3.4	13.0	0.4	2.3	15.0	0.3	0.7
	1	2.4	24.4	0.6	1.3	19.7	0.3	0.9
Busi	40	34.8	18.5	6.4	2.5	12.5	0.3	6.7
RSO_2	45	32.1	10.9	3.5	3.8	10.1	0.4	3.9
	50	29.6	30.4	9.0	11.7	30.9	3.6	12.6
Busi	41	13.1	13.6	1.8	2.2	12.5	0.3	2.1
herd	46	15.9	7.4	1.2	2.8	9.2	0.3	1.5
	51	14.9	29.8	4.4	5.4	25.7	1.4	5.8

In figure 1 the risk has been plotted against time. From this it will be seen that there have been variations over the last four months of the investigation. In the case of the risk to the Lusulu herd, these variations have been almost negligible, but the other three sampling areas have all shown a rise in risk between June and July. This rise was most marked in the Busi area.

Discussion:

Since samples of flies dissected are obtained at intervals throughout the period 0830 to 1730 hrs, the mean number of flies per hour represents tsetse activity over almost the whole day and would therefore seem to be a valid sample.

The dissection technique has been described elsewhere. It allows of the rough identification of trypanosomes into the groups vivax, congolense and brucei / evansi. As yet no analysis has been made of variations in the occurrence of any one of these groups, the percentage infection referring to all three groups together.

Without having detailed knowledge of the sampling areas concerned, it is difficult to suggest a reason for the apparent rise in risk in the Busi area, compared with the more stable Lusulu area. However it occurs to me that, as the dry season progresses, the concentration of fly along the Busi riverine will increase and with it possibly also the density of game animals. Dissection work at Rekomitjic has indicated that, in areas of concentration of fly, and to some extent of game, in the dry season, the infection rate in the fly tends to reach a maximum.

Analysis of the figures with regard to possible variations in infection rate with species, sex and time of day will be undertaken when time is available and a more detailed report submitted.

B Leggate.

(B. Leggate)
ENTOMOLOGIST.
6th September 1962.

TRYPANOSOME RISK

Mean numbers of infected tsetse (G. morsitans) attacking bait oxen in one hour.

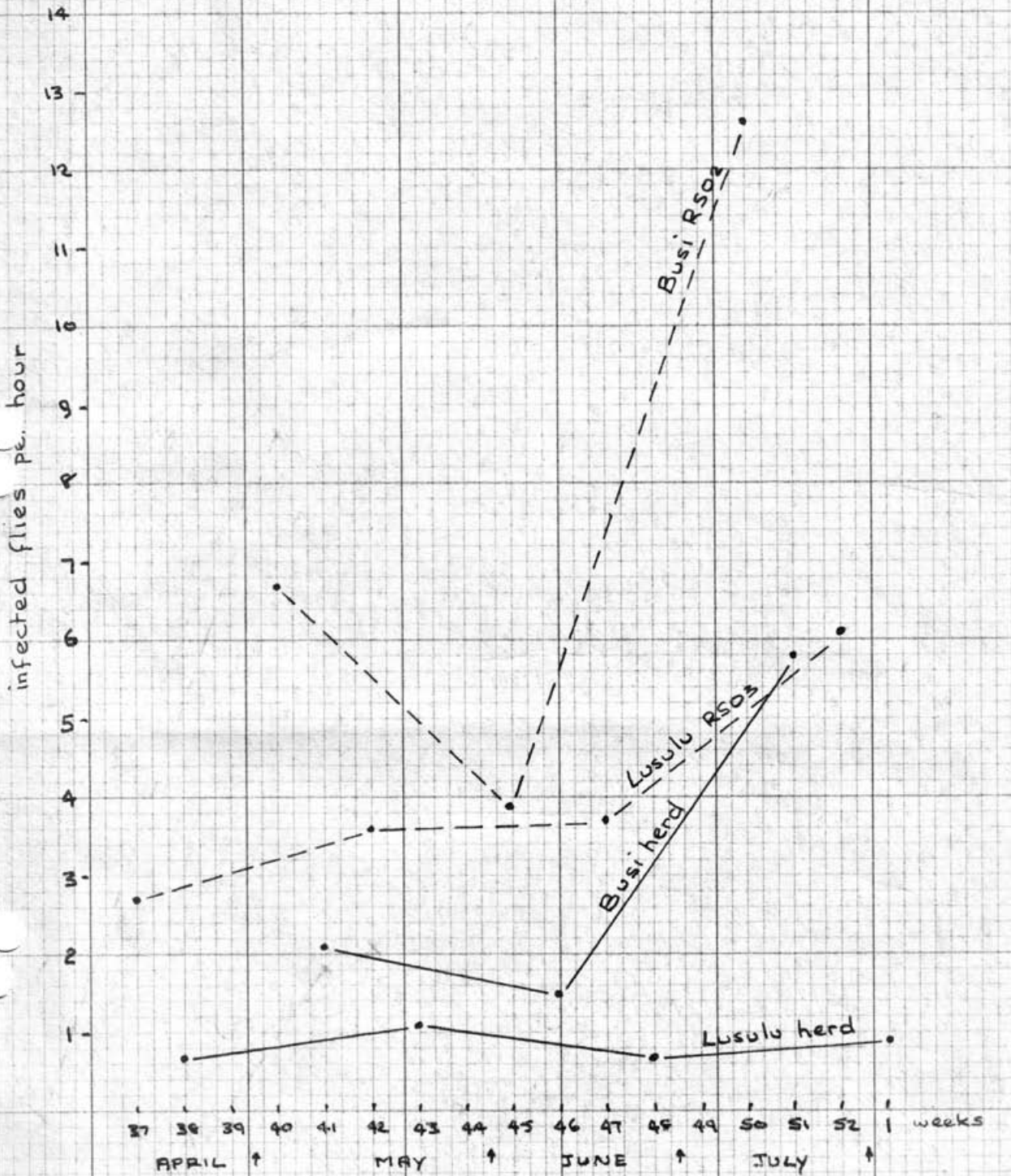

Figure 1.