

27th July, 1955.

The Director,  
Tsetse Fly Operations,  
P. O. Box 8100,  
Causeway, Salisbury.

A PRELIMINARY REPORT ON THE RESULTS OF BLOOD MEALS FROM TSETSE  
COLLECTED AT KARIANGWE - LUBU RIVER VALLEY : JUNE 1951 TO MAY 1952

The complete results of the identification of blood meals from tsetse collected at Kariangwe - Lubu river valley have now been received and the following is a preliminary report. A more detailed report will follow later.

A total of two hundred blood meals were collected during the period June 1951 to May 1952 from G. morsitans on three fly rounds in the Lubu river valley. At first sight this will probably seem to be not a very large number for nearly a year's work but it must be pointed out that on an average only two to three gorged tsetse which are the only ones suitable for this work were taken per fly round, that is two to three per two hundred flies captured. All blood meals were sent to the Chief Entomologist, Shinyanga and from there these were forwarded to Mr. Weitz of the Lister Institute of Preventive Medicine, Elstree, Herts.

The Lubu valley is a virtually undisturbed tsetse area, little or no shooting having taken place there and game animals can be described as numerous. For this reason the area was chosen for the ecological work I was to do while employed by the Beit Trustees. It therefore seems reasonable to accept these results as a fair indication of the food hosts of G. morsitans in an undisturbed area.

Game animals occurring in the Lubu valley as seen or recorded are as follows with notes on abundance:-

Elephant	- numerous and continually moving about.
Rhinoceros	- common along the Lubu and its tributaries.
Buffalo	- a number of large herds which were continually on the move never staying long in any one place.
Eland	- very rare
Roan Antelope	- common in the hills surrounding the valley but seldom venturing down into the valley itself.
Sable Antelope	- as for Roan Antelope
Kudu	- common
Waterbuck	- numerous along the Lubu river
Bushbuck	- common along the Lubu and its tributaries
Reedbuck	- common on the vleis in the hills along the west of the valley.
Impala	- very numerous in the Lubu valley - herds of one hundred animals or more <sup>are</sup> common
Zebra	- common in the hills around the valley occasionally venturing down into the mopane of the valley floor during the wet season.
Duiker	- common especially in the woodland of the hills surrounding the valley
Baboons	- very numerous
Vervet monkeys	- common
Marthog	- numerous

Hyena - common  
 Jackals - common  
 Wilddog - occasional visits of these into the area

Results of the blood meals taken are as given below in the table. -

BLOOD MEAL IDENTIFICATIONS		
HOST	MEALS IDENTIFIED	PERCENTAGE
ELEPHANT	12	6%
RHINOCEROS	12	6%
BUFFALO	7	3.5%
ROAN ANTELOPE	2	1%
WATERBUCK	3	1.5%
KUDU	2	1%
IMPALA	1	0.5%
REEDBUCK	4	2%
BUSHBUCK	5	2.5%
DUIKER	4	2%
KUDU OR BUSHBUCK	15	7.5%
WATERBUCK POSSIBLY IMPALA	1	0.5%
KUDU OR ELAND	3	1.5%
KUDU OR BUFFALO	1	0.5%
UNIDENTIFIED BOVIDS POSSIBLY SABLE ANTELOPE	7	3.5%
UNIDENTIFIED BOVIDS	10	5%
WARTHOG	65	32.5%
WARTHOG OR BUSHPIG	16	8%
MAN	4	2%
MONKEY	1	0.5%
AVIAN	5	2.5%
UNIDENTIFIED MAMMAL	3	1.5%
UNIDENTIFIED NEGATIVES	17	8.5%

} % Bovid  
32.5%

} % Pig  
40.5%

Note: Unidentified negatives were tested for General Bovid, Primate, Pig Rhinoceros, Elephant, Horse (Zebra), General Mammal, General Avian Blood.

Arising out of the above results are the following points of interest:-

1. The importance of warthog and possibly bushpig is established. These results compare very well with East African work and it is of interest to quote from a letter written to me by Mr. J. Ford, Director of E.A.T.T.R.R.O. in which he says "you will note the very high proportion of warthog bloods and your total results tie up very well with our results from Daga Iloi and Urambo."

2. Impala occur in considerable numbers in the Lubu valley yet only one blood meal for this species was collected. It seems that there is possibly something wrong with the test here for it is hard to believe that the tsetse would not be attracted by this antelope when they are to be continually found in the tsetse habitat. I would suggest that the "unidentified Bovid possibly Sable" may equal impala for in each case impala were recorded as the greatest possibility and for all but one these were taken on the Lubu fly round where

come here too.

3. Two out of the four human blood meals were collected the day after labourers had been cleaning the fly round path. This is an indication of the validity of the test.

4. Three out of the four reedbuck blood meals were taken on the Chicomba fly round and this was the only round on which reedbuck occurred. This can be taken as a further point in favour of the validity of this test.

5. The importance of elephant and Rhino in this undisturbed area is obvious and in the case of Rhino I must quote an extract from my February report for 1952 - "It recently occurred to me that Rhino in the Lubu valley maybe of some importance as food hosts for G.morsitans for they live more or less permanently in the fly areas and their habits are somewhat similar. During the hot unfavourable season both the Rhino and the fly retreat into the riverine thicket for shade. In the hours of daylight the Rhino lie up deep in the dense thicket coming out only towards evening and returning soon after sunrise. At these times, that is towards evening or just after sunrise a Rhino wandering about, especially in the places where thicket gives way to open grassy glades would provide a fine source of food for hungry flies concentrated along the thicket edge. Now just as in the hot season the Rhino and the fly make for the riverine thicket, in the wet season they both leave it and move into the more open mopane and mopane/Terminalia spp./Commiphora spp. woodland areas. The Rhino probably leave the riverine thicket in the wet season because it is so dense and always damp."

6. Buffalo have often been suggested as one of the most important of the tsetse hosts but the above results do not bear this out. Personally I believe that they are a very uncertain source of food.

7. Baboons are as numerous in the Lubu valley as any of the Tsetse Fly operations areas in Southern Rhodesia yet in this collection there is only one blood meal which could have come from a baboon - that recorded as monkey.

8. The Avian percentage obtained here is consistent with results of workers in other areas.

The recent blood meal work has brought new light to bear on the tsetse/game complex and it is to be hoped that now with the virtual perfection of the precipitin technique that opportunity will be given for further collections to be made in Southern Rhodesia in the various areas with a view to increasing our at present slight understanding of the effects of game destruction on the tsetse.

It is of importance to mention that according to Mr. Ford, Mr. Weitz will shortly be in a position to deal with further collections.

*Wendell F. Lawrence*

ENTOMOLOGIST.