

THE TSETSE POSITION IN THE KARIBA AREA SUBSEQUENT TO
THE 1956 AERIAL SPRAYING CAMPAIGN.

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Introduction

The tsetse position at Kariba prior to and during the aerial spraying campaign of 1956 has been discussed in detail by Mr. Phelps in his report. In the present report the data obtained from the various fly rounds in the Kariba area from the end of the aerial spraying campaign in October 1956 until June 1957 are presented.

The Fly Rounds

The fly rounds in the area are

1. The Kasese Fly Round
2. The Chavaru Fly Round
3. The Nyanyanya Fly Round
4. The Kasese Road traverse.

1. The Kasese Fly Round

In Table 1. the catch of tsetse from the Kasese Fly Round for the period October 1956 to June 1957 is presented and its components analysed. In table 2 the catch for an approximately comparable period for 1955 to 1956 is presented for purposes of comparison. The results are shown in graph form in Figures 1 and 2. It must be pointed out that in the period October 1955 to June 1956 the tsetse in the Kasese area were greatly disturbed by road building operations and the application of insecticide during trials with Swingfog machines so that the figures do not represent a "normal" population by any means.

Date	Total Catch.	% non teneral females.	% Teneral flies.
Oct. 4. 10. 56.	5	nil	nil
Nov. 22. 11. 56.	9	25%	11%
Dec. 14. 12. 56.	25	4%	nil
Jan 19. 1. 57.	24	14.3%	12.5%
Feb. 23. 2. 57.	32	nil	3%
Mar. 15. 3. 57.	17	nil	5.8%
Apr. 30. 4. 57.	49	4.2%	2%
June. 18. 6. 57.	30.	nil	16.6%

Table 1. Catch of Tsetse on the Kasese Fly Round
October 1956 to June 1957.

Date	Total Catch	% non teneral females	% Teneral flies.
Oct. 2. 10. 55	23	35.7%	21.7%
Nov. 19. 11. 55.	6	20%	16.6%
Dec. 19. 12. 55.	10	50%	nil
Jan. 20. 1. 56.	9	25%	11%
Feb. 22. 2. 56.	26	16.6%	3.8%
Mar. 15. 3. 56.	19	5.5%	5.3%
Apr. 26. 4. 56	11	nil	9%
May 4. 5. 56.	15	13.3%	nil

Table 2. Catch of Tsetse on the Kasese Fly Round
October 1955 to May 1956

From the figures for October 1956 to June 1957 it will be seen that after being greatly reduced by the aerial spraying campaign the numbers in the catch build up again with great rapidity, in fact the figures for the same period in 1955 - 1956 are exceeded. The reason for this great increase is undoubtedly the immigration of tsetse from the surrounding untreated country. The effect has probably been accentuated by the decline in human activity in the area and a consequent influx of game. Game animals were certainly much more common in the Kasese River area in June 1957 than in June 1956. Nevertheless the rapidity of the build up of the fly population as represented by the catches on the fly round is remarkable. Apart from minor variations the composition of the catch is similar in the two periods considered.

2. The Chavaru Fly Round

Details of catches on the Chavaru Fly Round for the period in 1955 to 1956 are shown in Tables 3 and 4 and in graph form in Figures 3 and 4.

Date	Total Catch	% non teneral females	% Tenerals.
Oct. (mean)	13	10.6%	11.2%
Nov. 23. 11. 56.	26	nil	nil
Dec. 14. 12. 56.	8	12.5%	nil
Jan 20. 1. 57.	73	4.2%	2.7%
Feb. 25. 2. 57.	53	1.9%	nil
Mar. 16. 3. 57.	65	nil	nil
Apr. 30. 4. 57.	76	5.3%	5%
Jun. 18. 6. 57.	50	22%	16.6%

Table 3. Catch of tsetse on the Chavaru Fly Round October 1956 to June 1957.

Date	Total Catch	% non teneral females	% tenerals.
Oct. (mean)	46	17.9%	15.7%
Nov. 3. 11. 55.	11	18.2%	nil
Dec. (mean)	17	10.7%	3.3%
Jan. 16. 1. 56.	22	20%	9.1%
Feb. 25. 2. 56.	23	10.5%	17.4%
Mar. 20. 3. 56.	24	13%	4.2%
Apr. 20. 4. 56.	21	nil	nil
May 21. 5. 56.	24	nil	nil
June 19. 6. 56.	5	20%	nil

Table 4. Catch of tsetse on the Chavaru Fly Round October 1955 to June 1956.

The Chavaru Fly Round was the least disturbed of the three fly rounds in the Kariba area. No swing fog insecticide applications were made in the vicinity and it was relatively little affected by road building operations.

The rapid build up in numbers of tsetse caught is again very marked. Why the figures of the months January to June 1957 exceed those of the same period in 1956 is not known. It may indicate a real increase in the population of the area but sufficient evidence is not available to confirm this. It is probable that this area was very little affected by the aerial spraying and being beyond the limit of the block spray area any effect of the riverine spraying was probably rapidly negated by immigration from the surround-

3. Nyanyanya Fly Round

Details of the catches on the Nyanyanya Fly Round are shown in tables 5 and 6 and figures 5 and 6. The increase in tsetse caught here after the aerial spraying is comparable with that on the Chavaru Fly round. Like the latter it was outside the block spray area but, as mentioned in Mr. Phelps report, the east bank of the Nyanyanya River (the fly round is on the west bank) was block sprayed on one occasion and the river itself was included in the riverine spraying. Although the numbers of tsetse caught on this fly round were somewhat reduced during the course of the aerial spraying campaign total eradication was never achieved even for a short period. This and the subsequent rapid build up was probably due to a constant immigration of tsetse from the heavily infested areas a short distance to the east.

Date	Total Catch	% non teneral females	% Teneral flies
Oct. 11. 10. 56.	14	10%	nil
Nov. 24. 11. 56.	46	2.3%	4.3%
Dec. 15. 12. 56.	32	nil	nil
Jan. 19. 1. 57.	44	nil	nil
Feb. 22. 2. 57.	27	nil	nil
Mar. 15. 3. 57.	36	nil	5.5%
May. 1. 5. 57.	53	7.8%	3.8%
June 18. 6. 57.	87	11.2%	8%

Table 5. Catch of Tsetse on the Nyanyanya Fly Round October 1956 to June 1957.

Date	Total Catch	% non teneral females	% Teneral flies
Oct. 13. 10. 55.	20	64.3%	30%
Nov. 21. 11. 55.	8	20%	37.5%
Dec. 20. 12. 55.	6	nil	nil
Jan. 23. 1. 56.	9	37.5%	11.1%
Feb. 20. 2. 56.	20	10.5%	5%
Mar. 12. 3. 56.	30	16%	16.6%
May 2. 5. 56.	6	nil	nil
June 18. 6. 56.	8	12.5%	nil

Table 6. Catch of tsetse on the Nyanyanya Fly Round October 1955 to June 1956.

4. The Kasere Road Traverse

The details of catches on the road traverse for the period October 1956 to June 1957 are shown in Table 7 and Figure 7. There are no comparative figures for 1955 to 1956 as the road traverse was only commenced just prior to the commencement of the aerial spraying campaign.

Date	Total Catch	% non teneral females	% Teneral flies
Oct. 16. 10. 56	nil	nil	nil
Nov. 23. 11. 56	55	3.7%	3.6%
Dec.	58	17.8%	3.4
Jan 19. 1. 57	112	17.4%	8%
Feb. 23. 2. 57	124	18.0%	10.5%
Mar. 15. 3. 57.	56	22.9%	14.3%
Apr. 30. 4. 57.	155	10.1%	4.5%
June 18. 6. 57.	132	13.9%	2.3%

In spite of the great reduction in numbers achieved by block spraying the area through which this traverse passes here again the increase in catch subsequent to the spraying has been very rapid.

Glossina pallidipes is still resident in the area, 4 specimens having been caught on the traverse since October 1956.

5. Discussion

It was anticipated that by reducing the tsetse population in the vicinity of the Kariba dam site the sleeping sickness hazard to workers in the area would be virtually eliminated until such time as the flooding removed the tsetse habitat entirely. This immediate object of the spraying campaign has apparently been achieved. Between the lower Kasese river and the dam site, including the township area there is now no established fly. The reduction of the fly population was followed by the destruction of potential fly habitat in the course of construction activities. Workers engaged on road building and clearing operations in the area were subjected to a greatly reduced challenge from tsetse during the spraying operations, and to date no case of human trypanosomiasis has been reported amongst the Kariba workers.

However, the figures presented above show clearly that the effect of the aerial spraying campaign on the tsetse population within the treated area has been of short duration. There has been a rapid reinvasion of tsetse from the surrounding infested country, at a rate that was not foreseen. It is now evident that to have achieved elimination of tsetse between the Nyanyanya river and the dam site, and to have maintained it free for a period of 18 months, it would have been necessary to treat a far larger area. How much larger the area would have had to have been to achieve the desired result one can only guess but it may well be something in the region of at least five times the block spray area and probably considerably greater. Riverine spraying alone must be considered unsatisfactory as the concentration of tsetse on the rivers cannot be relied upon for more than a brief period and this period occurs at a time when weather conditions are far from ideal for spraying.

6. Summary

1. The numbers of tsetse caught on the Kariba Fly Rounds subsequent to the 1956 aerial spraying campaign are presented in table and graph form.
2. From the data it is seen that there has been a great increase in the numbers of tsetse caught since the cessation of spraying.
3. The bulk of this increase was probably due, in the first instance, to a reinvasion of the treated area from the surrounding fly belt.

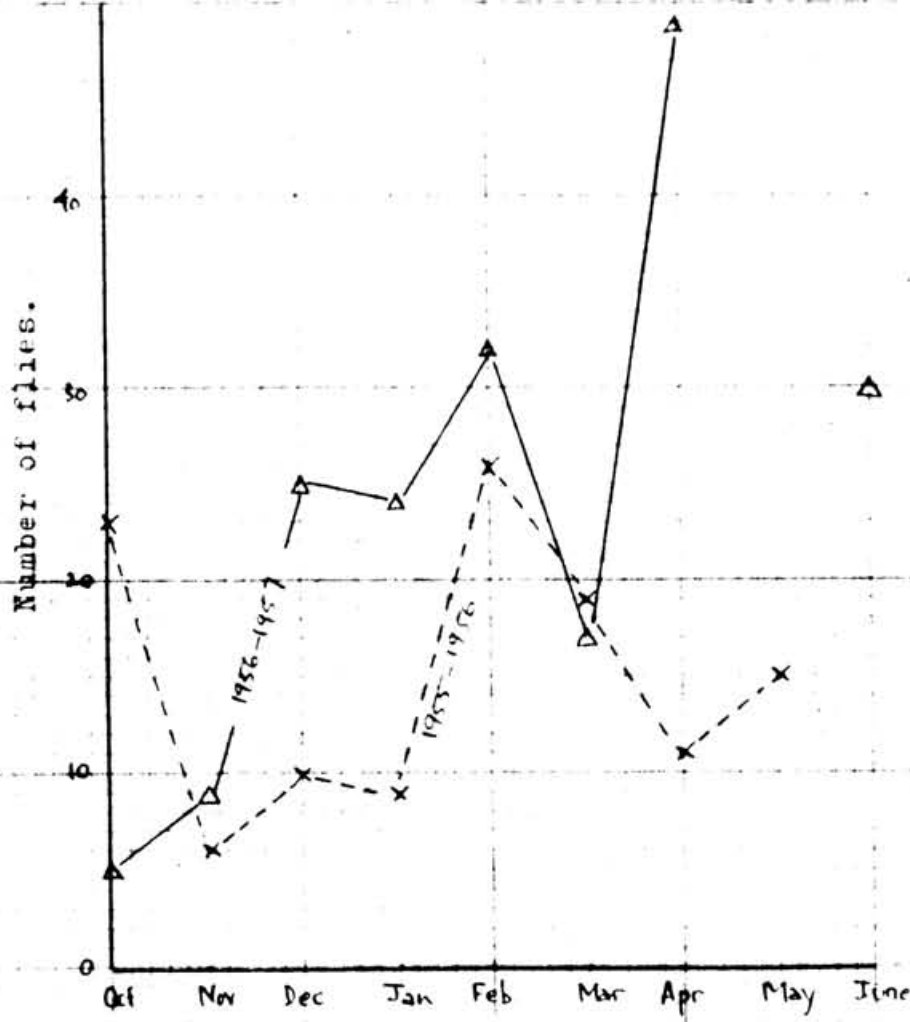


Fig.1. Graph showing Total catch on Kasese Fly Round for the periods Oct - June 1955-56 and 1956-57.

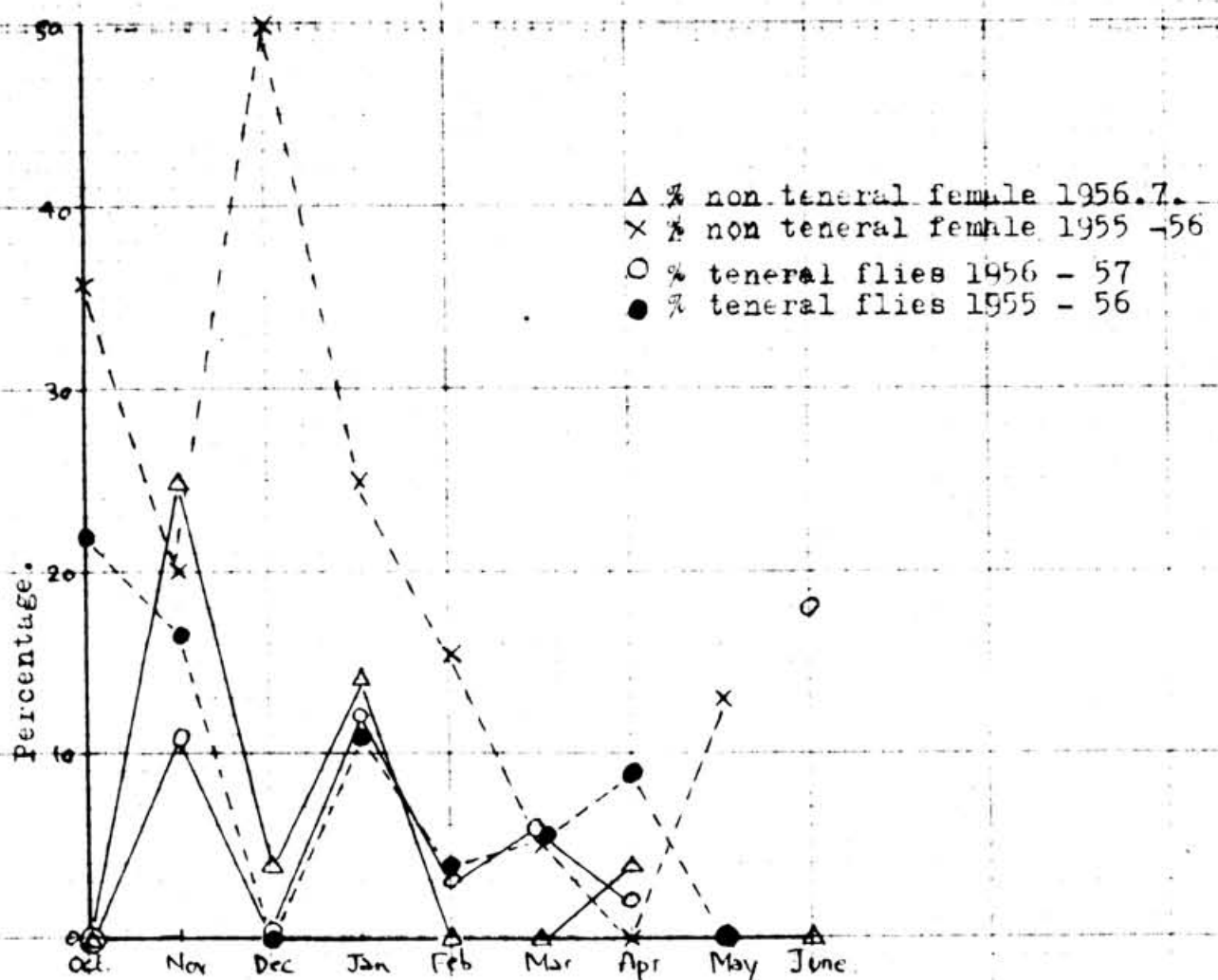


Fig.2. Graph showing % non teneral females and % tenerals caught on Kasese Fly round for periods as above.

Chavaru Fly Round.

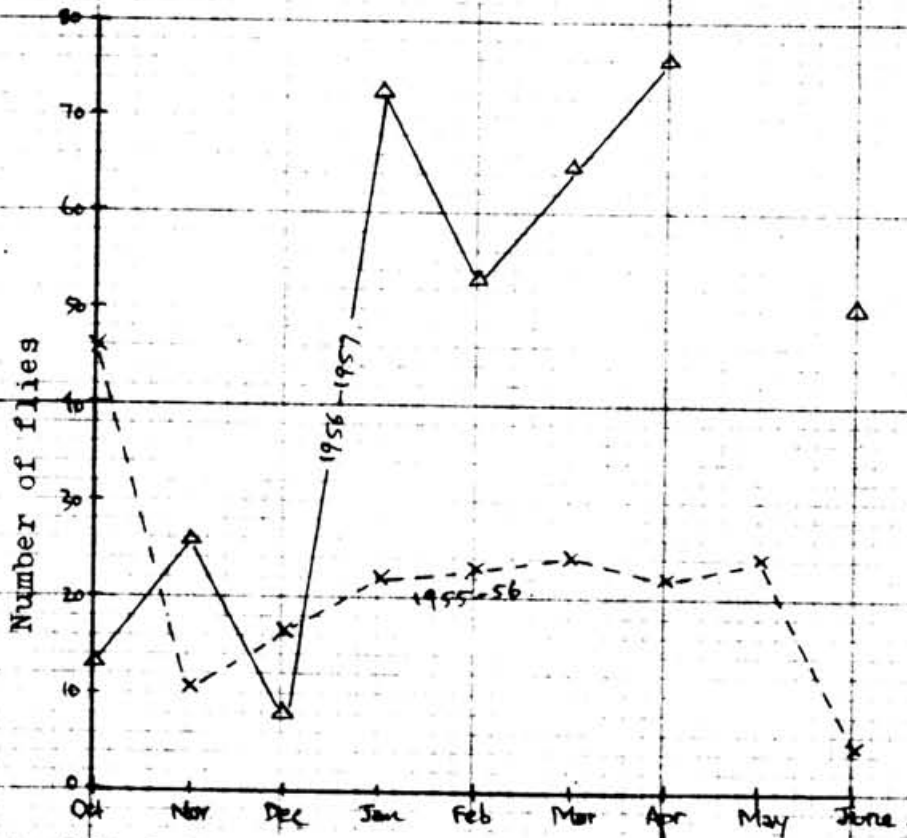


Fig.3. Graph showing total catch on the Chavaru Fly Round for the periods October-June 1955-56 and 1956-57.

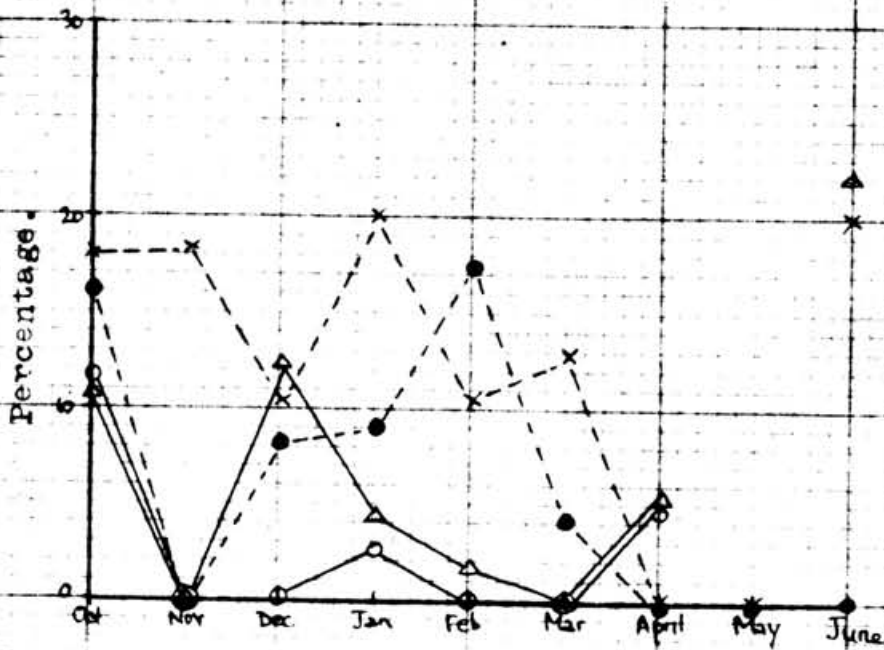


Fig.4. Graph showing % non teneral females and % teneral flies caught on the Chavaru Fly Round for the periods as above.

- △ % non teneral females 1956-57
- × % non teneral females 1955-56
- % teneral flies 1956-57
- % teneral flies 1955-56

Nyanyanya Fly Round.

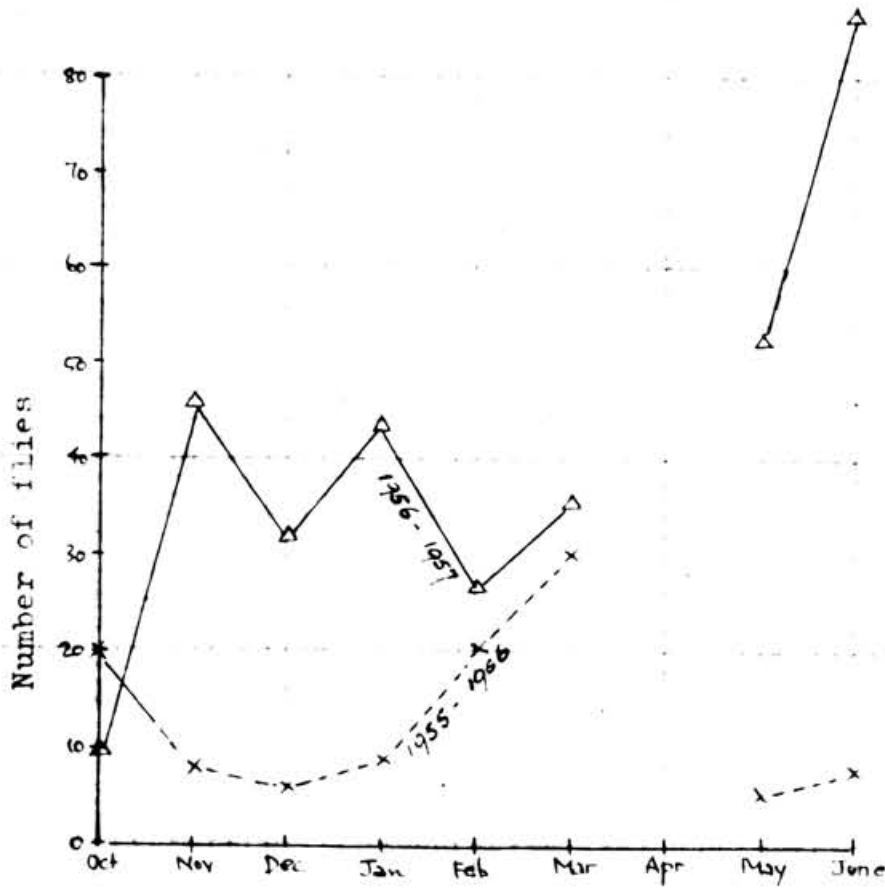


Fig.5. Graph showing the total catch on the Chavaru Fly Round for the periods Oct-June 1955-56 and 1956-57.

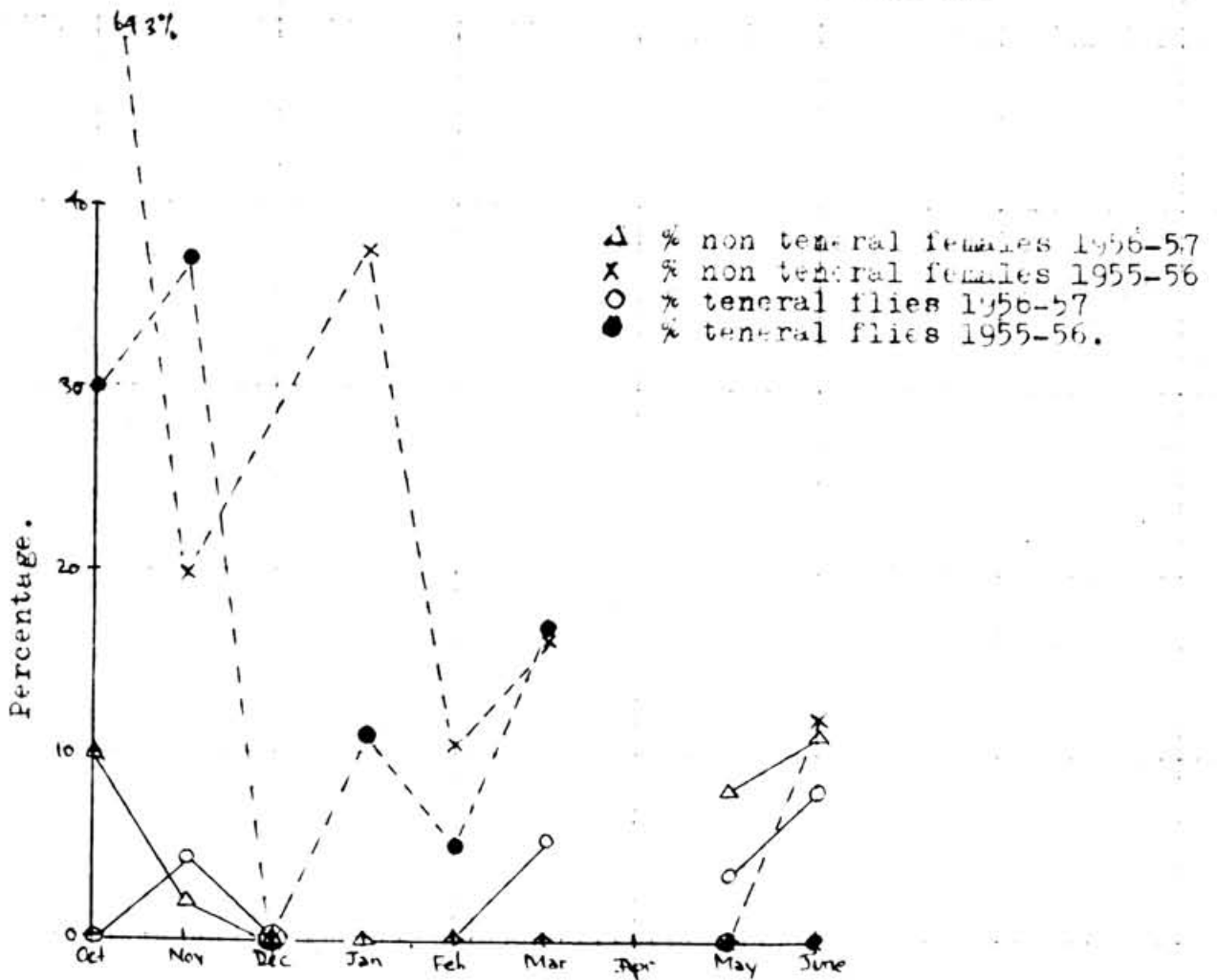


Fig.6. Graph showing % non terrenal females and % terrenals caught on the Nyanyanya Fly Round for periods as above.

Kasese Road Traverse.

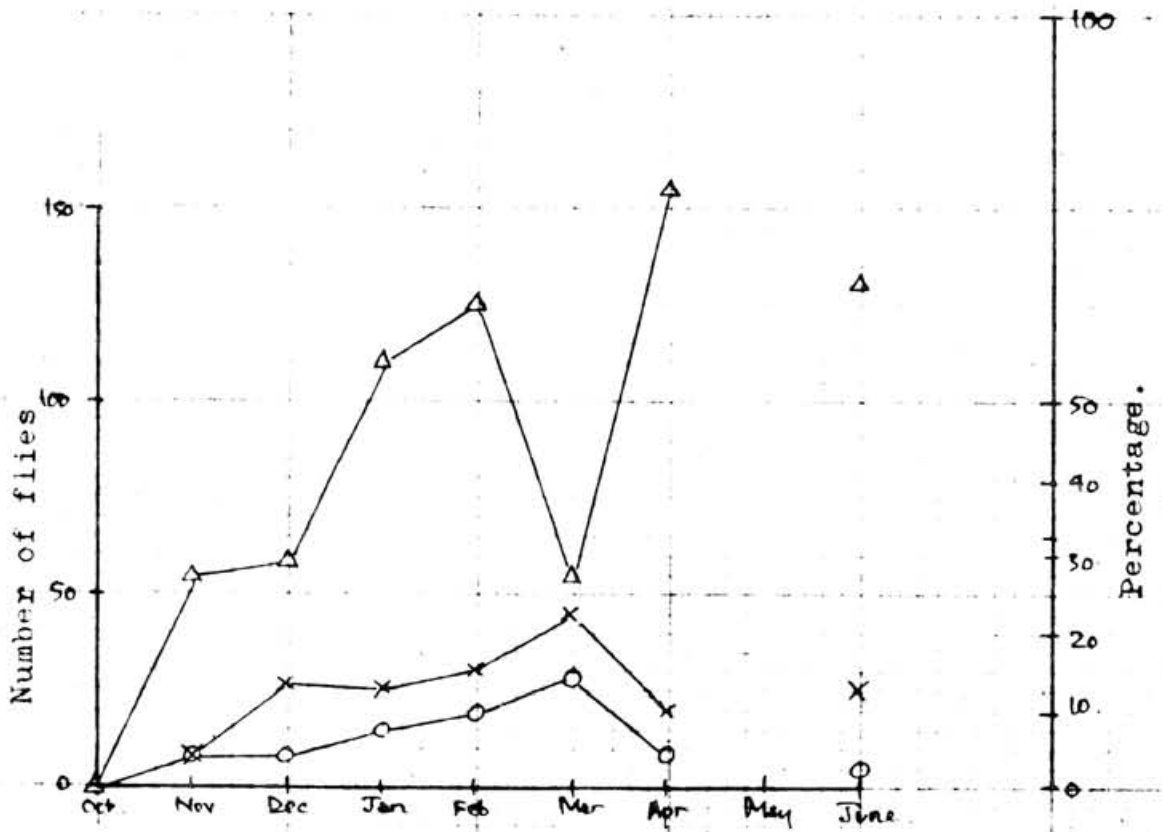


Fig.7. Graph showing total catch, % non teneral females and % tenerals caught on the Kasese Road traverse during the period October 1956 to June 1957.

- △ Total catch.
- x % non teneral females
- % tenerals.