

## SEASONAL OCCURRENCE AND THE EFFECT OF HOST ATTRACTIVENESS ON THE ABUNDANCE OF STABLE FLIES AND HORN FLIES ON CATTLE\*

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Field experiments to determine the relative values of various insecticidal and repellent materials against the common species of blood sucking flies, namely, the stable fly, *Stomoxys calcitrans* (L.), and the horn fly, *Haematobia serrata* (Deev.), were conducted at Stillwater, Oklahoma, during the period June 11 to September 13, 1940. Cattle from the dairy department of the Oklahoma A. & M. College were used in these experiments. Fly counts were made at half-hour intervals on animals staked 50 feet apart. The species and numbers of flies on each side of the animals were noted by two observers and the data represent the average of these observers' records.

It must be pointed out that the observations on fly abundance were made upon 14 animals in one pasture that may not be representative of this area, so far as the abundance of these flies was concerned. Further, the fly counts were made during but a portion of the day, 8 A. M. to 2 P. M. These data do, however, give an idea of the fly abundance in this pasture. It is planned to continue this study in order to obtain more complete information on the seasonal abundance of these species in this region.

Figure 1 shows the average number of each of the two species of flies per animal for each day of observation, the mean temperature for that portion of the day during which observations were made, and rainfall. The curve representing fly population was drawn from a moving three-point average. Owing to interruptions in field observations, fly populations are shown in four separate periods rather than as a continuous record.

*Comparative abundance of the two species.* On June 11 there was an average of 46 stable flies per animal. This was the point of greatest abundance in the first period and in fact for the entire season. Figure 1 shows that at no other time during the period of these observations was this species as numerous as it was early in June. In the first period an average of 67 horn flies per animal on June 11 was the high point of the abundance of this species for the season. In contrast to the stable fly, however, this species occurred in large numbers at several other times during the period of the study.

*The effect of temperature on fly abundance.* General field observations showed that during the period when these observations were made stable flies appeared on the cattle at a later hour than did the horn flies. As a rule stable flies appeared in numbers after 9 A. M., when there was a general increase in temperature. Later in the morning, about 11 A. M., the number of stable flies decreased. On the other hand horn flies occurred in numbers early in the morning during the period when these observations were made.

*Attractiveness of cattle to stable flies and horn flies.* The fly population on unsprayed animals was studied over a five-day period, namely July 22

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to 26 inclusive, to determine the individual attractiveness to *Stomoxys calcitrans* (L.) and *Haematobia serrata* (Desv.) and also to determine whether the unsprayed animals could be used as checks for the base oil and toxic-repellent materials in repellency tests. A total of 560 fly counts was made at one-half hour intervals on 14 animals. The observational totals for each of the fly species on the individual animals are shown in Table I.

TABLE I.

*Comparative Attractiveness of Test Animals to the Stable Fly, Stomoxys calcitrans* (L.), and the Horn Fly, *Haematobia serrata* (Desv.).

..... <i>Stomoxys calcitrans</i> .....		..... <i>Haematobia serrata</i> .....	
Animal	Observational Totals	Animal	Observational Totals
106	666	106	5,566
44	583	116	4,810
107	573	19	4,163
19	531	44	3,153
64	530	64	2,739
59	523	107	2,593
14	521	30	1,839
116	519	59	1,719
120	472	54	1,699
54	457	47	1,180
73	432	14	590
23	409	23	409
30	360	73	379
47	347	120	276

The observational totals of the two species on 14 animals for the five-day period were 6,928 stable flies and 31,115 horn flies or a ratio of approximately 1 stable fly to 5 horn flies. The lowest population of stable flies occurred on animal No. 47, which had a total of 347 flies, while animal No. 106 attracted the largest number, namely, 666. The mean population for the entire group was 507 flies. The numbers of horn flies on the several animals varied over a much greater range, from 276 flies on animal No. 120 to 5,566 flies on animal No. 106. The mean population of the horn flies was 2,645.

These results indicate that on account of the extreme variation in the attractiveness of different animals to the two fly species and also additional evidence of the difference in attractiveness of a single animal at different periods, it is impossible to use unsprayed animals as checks in determining the effects of fly sprays.

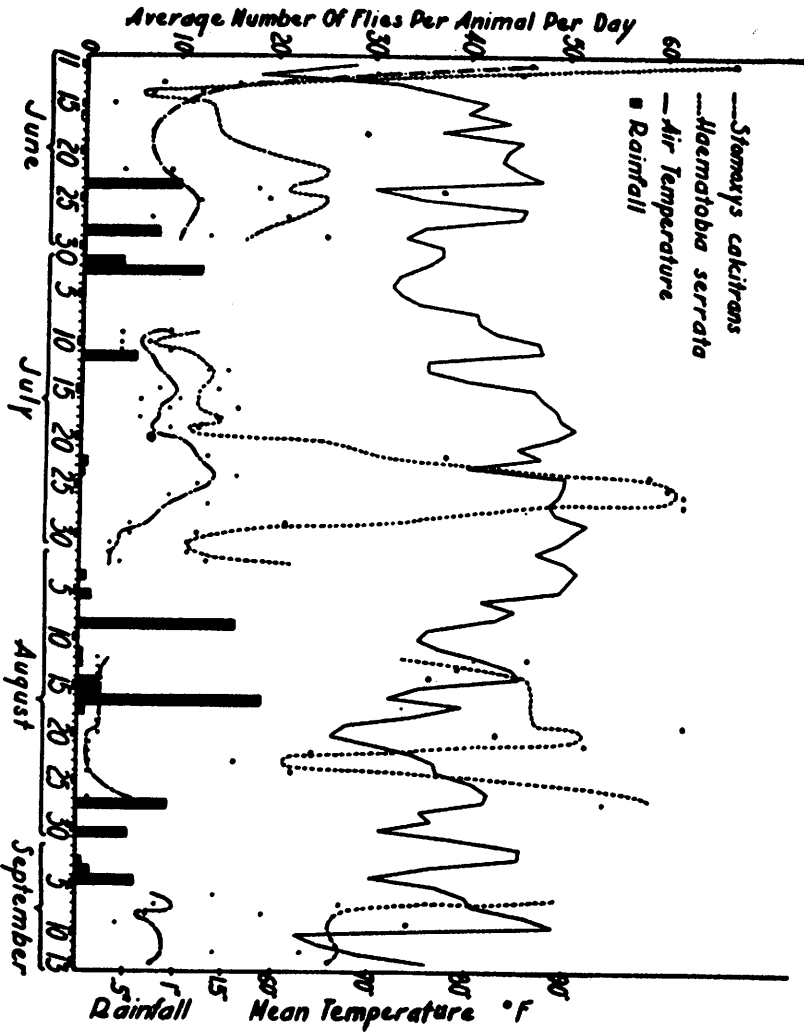


FIGURE 1.