A STUDY OF SOME BITING HABITS OF MOSQUITOES AND THEIR RESPONSE TO LIGHTS IN A NORTHERN OHIO WOODS

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As a preliminary to a more complete study of *Aedes vexans* which the author is making, some tests were conducted in a northern Ohio beech-maple forest to determine if the species, which is so extremely common, exhibits any unusual responses to lights or follows any definite biting pattern over a 24-hour period.

The first problem was to determine if there was any correlation between the intensity of the light used in a standard New Jersey light trap and the number of *A. vexans* collected during an interval of about eight hours at night. Collections were made during eighteen nights at various times throughout an entire summer.

A 50-watt lamp, which is usually used in the traps, resulted in an average collecting rate of .77 specimen of *A. vexans* per hour or 7.7 specimens of all species per hour.

When a 75-watt lamp was substituted, the number of mosquitoes collected was 7.1 per hour, with about a tenth of these being *A. vexans*.

When a less-intense lamp (25-watt) was used, the collecting rate dropped to 4.9 mosquitoes per hour with .9 of the total catch being *A. vexans*.

However, when the intensity of the lamp was further reduced to 15 watts, the rate of mosquitoes caught was increased to 10.4 per hour. *A. vexans* represented about a tenth of the total catch.

Therefore, these results do not show a correlation between light-intensity and the rate of mosquitoes collected per hour. Certainly *A. vexans* demonstrated no particular choice in this respect.

COLOR RESPONSES. Thirty-six experiments were conducted to determine the attractiveness or repellency of various colors to *Aedes vexans* and other mosquitoes.

Colored lamps of equal wattage were used in the New Jersey light trap and collecting rates for each color determined. An all-white fluorescent lamp, during the time of the experiment, attracted mosquitoes at the rate of 20.5 per hour. Two of these per hour were *Aedes vexans*. The proportion of males to females was 1:1.

The mosquito-collecting rates (mosquitoes per hour) for the various colors were as follows:

TABLE 1.

Time	Species collected	No.	No. mos./hr.	Proportion male-female
9:30–10:30 p.m. (evening)	*A. vexans*	1	4.00	1:3
	C. pipiens	3		
10:30– 4:00 a.m.	*A. vexans*	1	1.09	1:2
	C. pipiens	4		
	C. salinarius	1		
4:00– 8:00 a.m.	*A. vexans*	1	1.00	0:4
	C. apicalis	2		
	A. triseriatus	1		
	Lamp off during daytime			
9:30–10:30 p.m.	*A. vexans*	1	10.00	1:1
	C. pipiens	7		
	C. apicalis	1		
	C. salinarius	1		

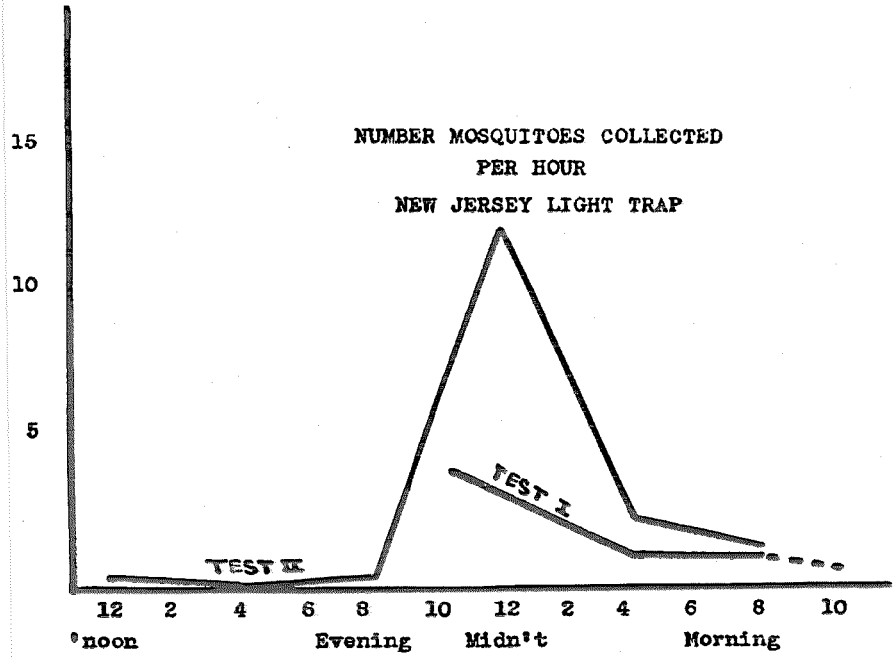

FIG. 1.—Graph showing the relative abundance of mosquitoes attracted to the trap during the evening ours just before midnight.

TABLE 2.

Time	Species collected	No.	No. mos./hr.	Proportion male-female
8:00–12:00 a.m.	*A. vexans*	5	12.75	12:5
	C. pipiens	30		
midnight)	*C. salinarius*	9		
	U. sapphirina	2		
	A. triseriatus	2		
	A. punctipennis	3		
2:00– 4:00 a.m.	*C. pipiens*	5	2.25	1:2
	M. perturbans	1		
	C. salinarius	3		
4:00– 8:00 a.m.	*C. pipiens*	4	1.25	0:5
	A. quadrimaculatus	1		
8:00–12:00 p.m.	*C. pipiens*	1	0.50	0:2
noon)	*C. salinarius*	1		
2:00– 4:00 p.m.			0.00	
4:00– 8:00 p.m.	*A. triseriatus*	1	0.25	0:1

Blue	8.71
Red	5.13
Yellow	3.21
Green	2.81

Aedes vexans showed no particular preference to color, nor did any of the other species collected.

TWENTY-FOUR-HOUR TRAP TESTS. Two 24-hour test periods were set up to determine the time of day when *Aedes vexans,* as well as other species, were being attracted to the trap. One test was conducted during the middle of July and the other in September. The results are shown in Tables 1 and 2.

The greatest number of mosquitoes were attracted to the trap during the evening hours (from 8:00 until 12:00), very few after midnight, and even less during the early morning hours. During the day time, no mosquitoes were taken in the trap. Nothing of significance was learned about *A. vexans* from these tests.

Usually there were more females in proportion to males collected in the trap but during the early morning hours, no males were taken. This is shown in Figure 2.

TWENTY-FOUR-HOUR BITING TEST. Since there seemed to be such a variation in the proportions of males and females, and in the actual number of mosquitoes collected in the light trap over a 24-hour test period it was of interest to study the biting habits over the same period of time.

Two tests were set up simultaneously with the light trap tests, one in July, and one in September. During these two tests 15-minute biting stations were set up in

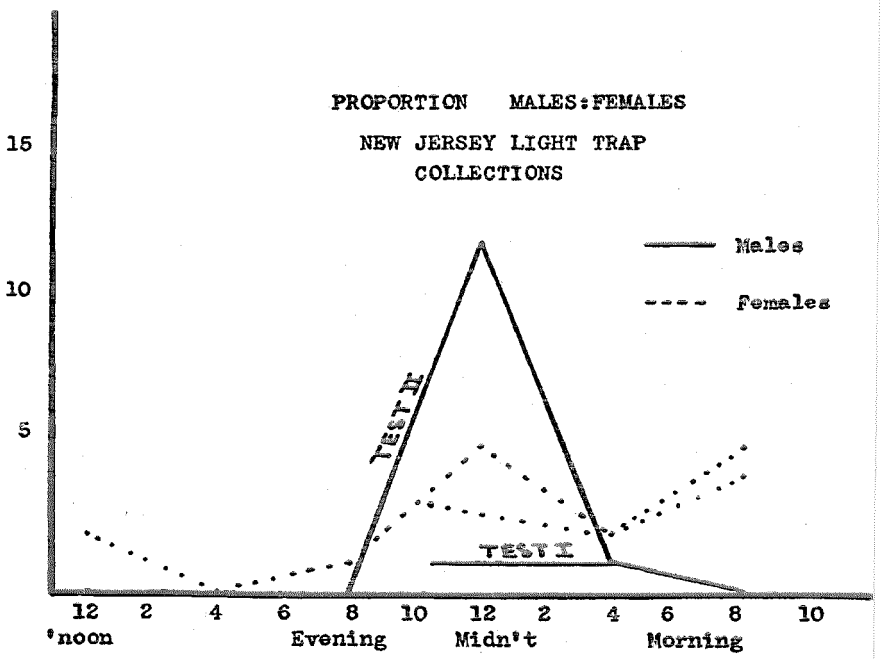

FIG. 2.—Graph showing the proportion of males to females as collected in the trap over a 24-hour period.

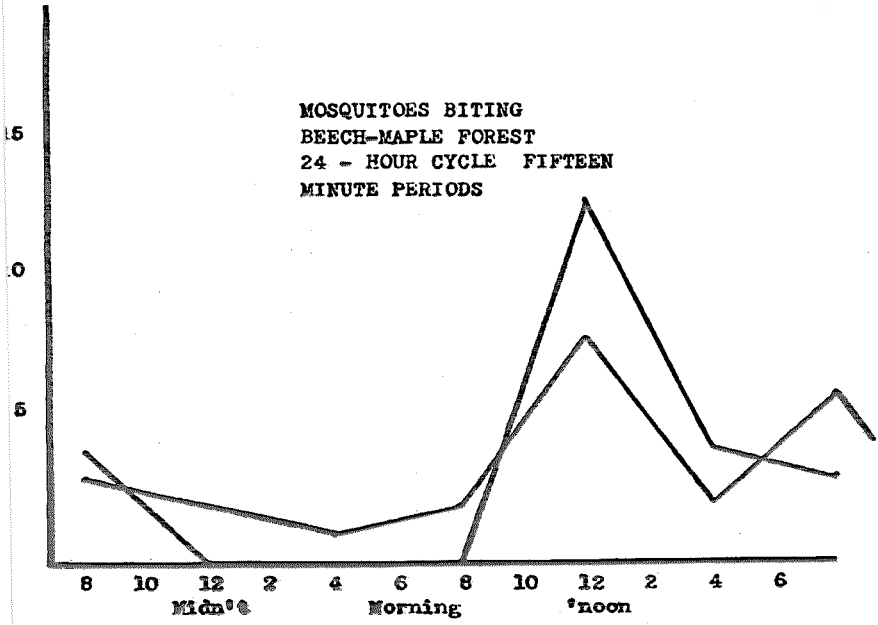

FIG. 3.—Graph showing the time of day when mosquitoes were biting most over a 24-hour period.

actly the same location every 4 hours er a 24-hour cycle.

Most of the biting took place during the ening hours and at noon in the bright nlight. *A. vexans* and *A. triseriatus* emed to bite almost any time. Large mbers of the latter species accounted ostly for the noon rise in the biting rate. actically no mosquitoes could be found ing at this particular station in the early orning hours.

SUMMARY. No correlation could be monstrated between light intensity and the rate of mosquitoes collected per hour. Although *A. vexans* showed no particular preference to color, the other species collected seemed to prefer the blue and red lights used in the trap.

More mosquitoes were attracted to the light trap during the early evening hours than at any other time, and also did most of the biting during that period. Even though males were undoubtedly present at all times, none were taken with the early morning catches.