

DIEL MAN-BITING ACTIVITY OF *CULICOIDES GUTTIPENNIS* and *C. PARAENSIS* IN SOUTHERN WISCONSIN¹

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ABSTRACT. *Culicoides paraensis* (Goeldi) and *C. guttipennis* (Coquillett) were captured during a study of the diel and vertical feeding behavior of treehole mosquitoes in southern Wisconsin. *C. paraensis*, which has not been previously reported north of Tennessee in the

central United States, was collected almost exclusively in arboreal stations and during the mid-day periods. *C. guttipennis*, on the other hand, was found at all vertical heights and the collections tended to confirm previous reports of nocturnal biting behavior.

During an investigation of diel and vertical distribution of blood-feeding activity of *Aedes triseriatus*, other insects that attempted to feed on the observer were routinely collected. Among these were 2 species of *Culicoides* (Diptera: Ceratopogonidae) taken in sufficient number for analysis of biting patterns. One of the species, *C. paraensis* had not previously been reported from north of Tennessee in the central United States.

METHODS AND MATERIALS

The collections were made in southwestern Wisconsin on the R. P. Hanson farm in Iowa County. The study area is a predominantly oak-hickory forest. Collecting stations were at ground level, 5, 8 and 11 meters in a mature white oak, and collections were made at essentially 4-day intervals from July 8 to September 6, a total of 14. Each collection period (Table 1) equalled 1/12th of the daylight period from sunrise to sunset, ranging from 76 minutes on July 8 to 67 minutes on September 6. Each vertical site was visited once during each period with collection time at each site totaling 12 minutes. The within-period site visiting order was randomized in order to reduce the effect of any tendency of biting insects to follow

the collector from one level to another. Specimens were captured in test tubes as they fed on the collector's exposed arms. Time and site were recorded for each specimen, and they were returned to the laboratory and identified.

Inasmuch as the site where the collections were made is known to be endemic for La Crosse virus (Lisitz et al. 1977), specimens were pooled, as available, for virus isolation attempts. Pools each contained 3-30 individuals. The flies were placed in TenBroeck tissue grinders which were previously chilled at -20°C. One drop of diluent (Medium 199 with Hanks' salts and 20% heat inactivated fetal bovine serum plus 250 units penicillin and 200 µg streptomycin per ml) was added and the insects ground to a paste (Cornet et al. 1977). After trituration the volume was brought to 1 ml with diluent (4°C) and 0.03 ml inoculated intracranially into 1 day-old suckling mice. Mice were observed 7-10 days for death or neurological signs.

RESULTS AND DISCUSSION

The total of 169 specimens collected proved to consist of 2 species, *Culicoides guttipennis* and *C. paraensis*. Identifications were confirmed by Dr. W. W. Wirth of the Systematic Entomology Laboratory, U.S.D.A.

C. guttipennis is a common tree-hole breeding species occurring widely over the eastern United States (Wirth and

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Table 1. Diel and vertical biting activity of *Culicoides guttipennis* and *C. paraensis* in Southern Wisconsin.

	Period Number												Total
	1	2	3	4	5	6	7	8	9	10	11	12	
<i>C. guttipennis</i>													
0 m	8	8	4	2	2	0	0	0	0	0	0	0	24
5 m	14	6	7	1	0	2	1	1	0	1	1	1	35
8 m	19	3	7	7	4	0	0	1	0	0	2	4	47
11 m	3	4	2	5	1	1	0	0	0	0	0	2	18
Total	44	21	20	15	7	3	1	2	0	1	3	7	124
<i>C. paraensis</i>													
0 m	0	0	0	0	0	0	0	1	1	0	2	0	4
5 m	0	1	0	1	3	4	4	5	4	2	1	1	25
8 m	0	0	1	0	1	1	0	0	1	2	1	0	7
11 m	0	0	0	1	1	3	0	1	1	2	0	0	9
Total	0	1	1	2	5	8	4	7	7	6	4	0	45
<i>C. guttipennis</i> :	Ho: no difference in elevation in biting frequency $X^2=15.81$ df= 3 P<.001												
	Ho: activity equal throughout day $X^2=178.32$ df=11 P<.001												
<i>C. paraensis</i> :	Ho: no difference in elevation in biting frequency $X^2=23.53$ df=3 P<.001												
	Ho: activity equal through 12 periods in day $X^2=24.60$ df=11 P<.05												

Blanton 1967). *C. paraensis*, on the other hand, is a southern species distributed from South America (Wirth and Blanton 1959) into the southern United States and up the eastern part of the country. Its occurrence in rather large numbers in our area marks a significant northern extension of the known range of this species (Battle and Turner 1971).

C. guttipennis was collected at all 4 levels, but most commonly at 5 and 8 meters (Table 1). Man-biting activity by this species has been reported by Hair and Turner (1968) and others, and Snow et al. (1957) reported it as more prevalent on man in the forest canopy than at ground level. The large proportion of this species feeding in the early morning and the indication of increasing activity toward dusk tend to confirm the report by Tanner (1971) that it is most active at night and in the early morning.

C. paraensis also fed at all 4 levels, but more than 50% were taken at the 5 m level. Snow (1955) reported that, at Reelfoot Lake, Tennessee, this species was considerably more active in the forest

canopy than at ground level. Although, at our study site its greatest abundance was not in the canopy, it nevertheless preferred arboreal sites to ground level. It appeared to be exclusively diurnal as no specimens were collected during either of the crepuscular periods. Snow, et al. (1957) reported this species to be the most widespread and annoying species of *Culicoides* attacking man during daylight hours in the Tennessee River Basin. In our area, however, it does not appear to be a nuisance at ground level, and this, coupled with its diurnal biting habits may explain why it has not been previously reported north of Tennessee in the central United States. One would expect it to occur infrequently in light traps or ground level collections.

Only 93 specimens (10 pools) were assayed for arboviruses. No isolates of LAC virus were obtained.

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TRAPPING EFFECTIVENESS OF SEVERAL COMBINATIONS OF COLORS AND TEXTURES OF STICKY TRAPS FOR STABLE FLIES, *STOMOXYS CALCITRANS*

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ABSTRACT. Twelve combinations of colors and textures of Alsynite® panels were tested for their relative effectiveness in trapping stable flies, *Stomoxys calcitrans* (L.), at a dairy in northwest Florida. The test results showed by analysis of variance with a Duncan's test that the translucent flat (noncorrugated) panels were the most effective in trapping flies fol-

lowed by white flat, white corrugated-vertical, white corrugated-horizontal, green flat, green corrugated-vertical, green corrugated-horizontal, yellow flat, yellow corrugated-vertical, yellow corrugated-horizontal, gold corrugated-vertical, and gold corrugated-horizontal in order of decreasing effectiveness.

INTRODUCTION

Sticky traps have been used for trapping adult stable flies, *Stomoxys calcitrans* (L.), for several years. Wood shingles (Hansens 1951) and panels of plywood (Bailey et al. 1973) were coated with sticky materials for surveying adult stable fly populations. Alsynite® panels coated with Tack Trap® (Williams 1973) were tested in northwest Florida and the results showed that translucent Alsynite

panels were more effective than panels painted either red or black. A study was initiated to compare the trapping efficiency of the translucent Alsynite panels with other colors and textures of the same material.

MATERIALS AND METHODS

The trap consisted of 2 Alsynite panels each 35 cm by 45 cm. The 2 panels were