

OPERATIONAL AND SCIENTIFIC NOTES

COLLECTION METHODS FOR A BLOOD
HOST STUDY OF RICELAND
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Four trapping methods were used to collect mosquitoes for a blood host study in the rice growing areas of Arkansas Co., AR during the summer of 1978. The techniques employed were the truck trap, backpack aspirator, resting station and hand-held aspirator.

The truck trap was built according to the specifications of Steelman et al. (1968) and was driven along 27.5 km routes at 24 km/hr beginning at dusk on 16 different dates. Fourteen species were captured using this method. Species collected in greatest numbers are listed in Table 1. *Psorophora columbiae* (Dyar and Knab)

was the predominant species and accounted for 72.8% of all mosquitoes collected. *Anopheles quadrimaculatus* Say and *Culex erraticus* (Dyar and Knab) were the next most numerous species comprising 13.8 and 8.1% of the total respectively. Other species which averaged more than one individual per trapping date were *Aedes vexans* (Meigen), *Uranotaenia sapphirina* (Osten Sacken), and *Culex nigripalpus* Theobald. Species that averaged less than 1 individual per trapping date not shown in Table 1 were *Anopheles crucians* Wiedemann, *Culex territans* Walker, *Psorophora howardii* Coquillett, *Psorophora ciliata* (Fabricius), *Culex quinquefasciatus* Say, *Coquillettia perturbans* (Walker), *Culex salinarius* Coquillett and *Anopheles punctipennis* (Say). No blood-fed mosquitoes were collected from among those not listed in

Table 1. Numbers of mosquitoes collected by four methods in Arkansas Co., AR in 1978.

Method Species	Total collected	% of total	Mean/ date	Number bloodfed	% bloodfed
Truck trap					
<i>Ps. columbiae</i>	10,092	72.8	630.8	219	2.2
<i>An. quadrimaculatus</i>	1,917	13.8	119.8	3	0.2
<i>Cx. erraticus</i>	1,127	8.1	70.4	25	2.2
<i>Ae. vexans</i>	455	3.3	28.4	3	0.7
<i>Ur. sapphirina</i>	220	1.6	13.8	0	0.0
<i>Cx. nigripalpus</i>	42	0.3	2.6	1	2.4
Backpack aspirator					
<i>Ps. columbiae</i>	1,080	97.5	60.0	401	37.1
<i>Ae. vexans</i>	17	1.5	1.0	7	41.2
<i>Ps. ciliata</i>	5	0.4	1.0	3	60.0
<i>An. quadrimaculatus</i>	4	0.4	1.0	0	0.0
<i>Cx. erraticus</i>	2	0.2	1.0	0	0.0
Resting station					
<i>An. quadrimaculatus</i>	11,183	95.0	233.0	4,518	40.4
<i>Cx. erraticus</i>	583	4.9	12.2	76	13.0
<i>An. crucians</i>	3	0.1	1.0	1	33.0
<i>Cx. nigripalpus</i>	3	0.1	1.0	0	0.0
<i>Ae. vexans</i>	1	0.1	1.0	0	0.0
<i>An. punctipennis</i>	1	0.1	1.0	0	0.0
Hand-held aspirators					
<i>An. quadrimaculatus</i>	265	76.4	88.3	265	100
<i>Ps. columbiae</i>	80	23.0	26.7	80	100
<i>Cx. erraticus</i>	2	0.6	1.0	2	100

¹ Published with the approval of The Director of The Arkansas Agricultural Experiment Station.

² This publication is based upon work partially supported by the U.S. Department of Agriculture under Agreement No. 82-CRSR-2-1010. Any opinions, findings, and conclusions or recommendations expressed in this publication are those of the authors and do not necessarily reflect the views of U.S. Department of Agriculture.

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Table 1. The percentage of truck trapped mosquitoes that were blood-fed ranged from 0 for *Ur. sapphirina* to 2.4% for *Cx. nigripalpus*.

A D-Vac® backpack aspirator was used to collect mosquitoes resting in roadside vegetation. Each collection covered an area approximately 91.7 × 0.9 m. *Psorophora columbiae* occurred in the largest numbers in these collections, 97.5% of the mosquitoes collected. Seventeen *Ae. vexans* were collected along with very low numbers of *Ps. ciliata*, *An. quad-*

rimaculatus and *Cx. erraticus*. Thirty-seven and 41% of the *Ps. columbiae* and *Cx. erraticus* were respectively blood-fed. Although only 5 *Ps. ciliata* were collected, 60% were blood-fed.

Resting stations were constructed according to Edman et al. (1968). Four resting stations were placed at interfaces of wooded and open field or pasture areas. *Anopheles quadrimaculatus* and *Cx. erraticus* made up 95.0 and 4.9% respectively of the mosquitoes captured representing 48 trap collections. Only 4 other species were recorded, but in low numbers. These were *Cx. nigripalpus*, *An. crucians*, *An. punctipennis* and *Ae. vexans*. Forty percent of the *An. quadrimaculatus* and 13.0% of the *Cx. erraticus* captured by this method were blood-fed.

Hand-held aspirator collections from barn walls yielded predominantly *An. quadrimaculatus* followed by *Ps. columbiae* and *Cx. erraticus*. All mosquitoes collected by this method were blood-fed. An obvious bias for blood-fed mosquitoes collected in this manner to have fed on bovine animals contained in the barn is recognized. However, many different domestic animals were present in and around the barns and blood host tests conducted on these mosquitoes might have demonstrated some host preference.

Lancaster et al. (1968) listed 6 genera and 25 species present in Arkansas County. Only 14 species were collected and identified in this study, but 3 of these were new county records. These were *Ps. howardii*, *Cx. nigripalpus*, and *Cq. perturbans*. No *Ps. discolor* (Coquillett) were collected although Schwardt (1939) and Horsfall (1942) indicated that in light trap collections *Ps. discolor* was second in abundance only to *Ps. columbiae* and was occasionally more abundant.

The greatest diversity of species was obtained with the truck trap; however, this technique provided the lowest percentage of blood-fed mosquitoes. The hand aspirator collected the highest percentage of blood-fed mosquitoes, but these collections were strongly biased toward bovines. Neither of these techniques was as applicable for riceland mosquito collections as the resting station and backpack aspirator. The resting station was not effective for obtaining unbiased blood-fed *An. quadrimaculatus* and *Cx. erraticus* while the backpack aspirator functioned best for *Ps. columbiae*. The 3 most commonly collected species, *Ps. columbiae*, *An. quadrimaculatus* and *Cx. erraticus*, require different collecting techniques for blood-feeding investigations.

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EFFECTS OF FLOTATION METHODS AND OVERNIGHT HOLDING ON THE TOXICITY OF CHLORPYRIFOS TO LARVAE OF *CULICOIDES VARIIPPENNIS* (CERATOPOGONIDAE)^{1, 2}

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Research on *Culicoides variipennis* (Coquillett) as a vector of bluetongue (BT) virus in ruminants is conducted at the USDA, Agriculture Research Service Arthropod-borne Animal Diseases Research Laboratory in Denver, CO. Several of the research projects require a rather large number of field-collected larvae, some of which are shipped from distant parts of the United States. The common method used in our lab for separating these larvae from mud samples is direct flotation with dechlorinated tap water.

Kline et al. (1975) showed that direct flotation by using saturated solutions of magnesium sulfate was satisfactory to recover *Culicoides* larvae from salt marshes or intertidal zones. The following evaluations were undertaken to determine if such flotation would affect the toxicity of chlorpyrifos to the larvae of *C. variipennis*

¹ This paper reports the results of research only. Mention of a pesticide in this paper does not constitute a recommendation for use by the U.S. Department of Agriculture nor does it imply registration under FIFRA as amended. Mention of a commercial or proprietary product in this paper does not constitute an endorsement of this product by the USDA.

² This research was conducted in facilities of the U.S. Army Environmental Hygiene Agency, Denver, CO. under a Memorandum of Understanding entitled "Research on the control of insect vectors of mammalian diseases."

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